

AD-A059 843

ADMIRALTY UNDERWATER WEAPONS ESTABLISHMENT PORTLAND --ETC F/G 13/13
PAFEC75 ON THE A.U.W.E. ICL 1904S*. A USERS' GUIDE, (U)
APR 78 W J BUTTERWORTH

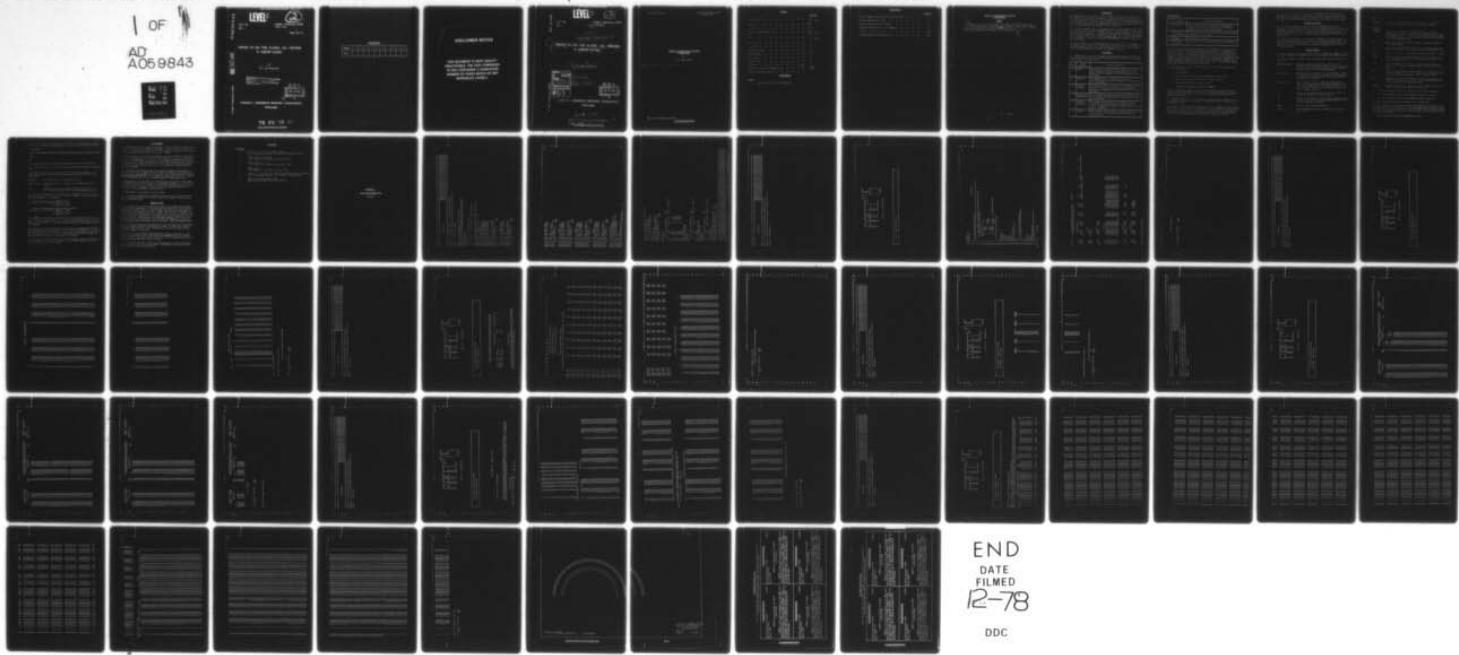
UNCLASSIFIED

OF
AD
A059843

AUWE-PUB-45685

DRIC-BR-63452

NL



END
DATE
FILED
12-78
DDC

UNCLASSIFIED/UNLIMITED BR63452

AD A 0 59 843

LEVEL II

2

U.D.C. No.
62:
681.3:

A.U.W.E. Publication 45685
APRIL 1978

Copy No. 15

PAFEC 75 ON THE A.U.W.E. ICL 1904S*
A USERS' GUIDE

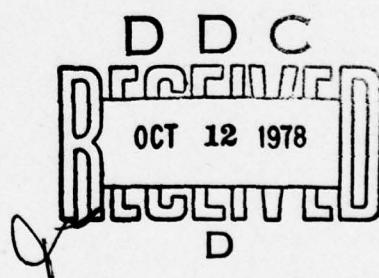
DDC FILE COPY

A.U.W.E. Publication 45685

BY

W.J. BUTTERWORTH

THIS DOCUMENT IS BEST QUALITY PHOTOCOPIED.
THE COPY FURNISHED TO DDC CONTAINED A
SIGNIFICANT NUMBER OF PAGES WHICH DO NOT
REPRODUCE LEGIBLY.



ADMIRALTY UNDERWATER WEAPONS ESTABLISHMENT
PORTLAND

78 09 28 08

UNCLASSIFIED/UNLIMITED

AMENDMENTS

DISCLAIMER NOTICE

**THIS DOCUMENT IS BEST QUALITY
PRACTICABLE. THE COPY FURNISHED
TO DDC CONTAINED A SIGNIFICANT
NUMBER OF PAGES WHICH DO NOT
REPRODUCE LEGIBLY.**

LEVEL**2**

ACC. No. 45685

U.D.C. No.

62:
681 . 3:

A.U.W.E. Publication 45685

(11) APRIL 1978

(12) 62p.

(14) A.U.W.E. - PUB - 45685

6

**PAFEC 75 ON THE A.U.W.E. ICL 1904S*,
A USERS' GUIDE,**

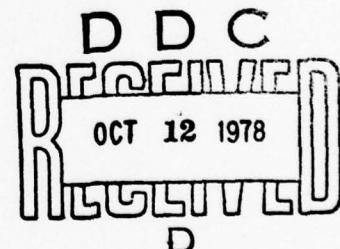
BY

W.J. BUTTERWORTH

ACCESSION NO.	
BTB	White Section <input checked="" type="checkbox"/>
BTO	Buff Section <input type="checkbox"/>
UNANNOUNCED	
JUSTIFICATION	
BT. DISTRIBUTION/AVAILABILITY CODE	
Stat.	AVAIL. and/or SPECIAL
A	23

(18) DRIC

(19) BR-63452



A.U.W.E. Publication 45685

ADMIRALTY UNDERWATER WEAPONS ESTABLISHMENT
PORTLAND

004 550

(Duplicate Front Cover for filming purposes)

78 09 28 08
UNCLASSIFIED/UNLIMITED

LB

U.D.C. No. 62:681.3

A.U.W.E. Publication 45685
April, 1978

PAFEC75 ON THE A.U.W.E. ICL 1904S*
A USERS GUIDE

by

W. J. Butterworth

© Controller HMSO London 1978

UNCLASSIFIED/UNLIMITED

CONTENTS

												<u>Page No.</u>
Duplicate Front Cover	...	...	...	...	...	...	...	...	...	...	(i) (ii) Blank
Title Page	...	...	...	...	...	...	...	...	...	...	(iii)
Contents	...	...	...	...	...	...	...	...	...	...	(iv)
Distribution (Detachable)	...	...	...	...	...	...	...	...	...	...	(v) (vi) Blank
Précis	...	...	...	...	...	...	...	...	...	...	1 2 Blank
Introduction	..	...	...	...	...	...	...	...	...	...	3
The System	...	...	...	...	...	...	...	...	...	...	3-5
Preparation of Data	...	...	...	...	...	...	...	...	...	...	5
Running PAFEC75	...	...	...	...	...	...	...	...	...	...	5-7
Files Created	...	...	...	...	...	...	...	...	...	...	8
Example of Run	...	...	...	...	...	...	...	...	...	...	8
References	...	...	...	...	...	...	...	...	...	...	9
Appendix A: Output from Example Run	..	...	...	...	...	...	...	...	...	...	A1-A43
Abstract Cards (Detachable)	...	...	...	...	...	...	...	...	...	...

ILLUSTRATIONS

Figure

1 Displaced Shape Plot from Example Run

DISTRIBUTION

							<u>Copy No.</u>
R.N.E.C., Manadon (Attention of Lt. Cdr. P. Luck)	...	...	...	...	...	...	1
A.S.W.E. (Attention A. Locke)	...	...	...	...	...	...	2
A.M.T.E. (Attention M. D. P. Fasey)	...	...	...	...	...	...	3
PAFEC Ltd. (Attention Dr. R. D. Henshell)	..	...	...	...	...	...	4
D.R.I.C.	...	...	...	...	...	...	5-32
A.U.W.E. Library for distribution	...	...	...	...	...	...	33-55

PAFEC75 ON THE A.U.W.E. ICL 1904S*
A USERS GUIDE

PRECIS

1. PAFEC75 is the latest development in the PAFEC suite which carries out stress or thermal analysis on any structure by means of finite element methods. A guide to the method of use on the 1904S at A.U.W.E. is given. It is intended that later a dedicated minicomputer will become available.

INTRODUCTION

2. PAFEC (Program for Automatic Finite Element Calculations) is a suite of programs which is capable of carrying out a large range of engineering calculations on engineering structures. Its development started at Nottingham University in the middle 1960's and it was first issued commercially in 1970 as PAFEC70. In late 1972 this was superseded by PAFEC70* and extensions were issued, when available. It was implemented at A.U.W.E. in 1976. (Ref. 1).

3. In 1976 the PAFEC group at Nottingham formed a company (PAFEC Ltd) to exploit the system. They then produced PAFEC75 based on a revised layout for input data, designed largely by users in 1974, together with internal changes to the scheme. This version was implemented at A.U.W.E. during 1977 and was finally made available to general users of the 1904S* in January 1978. It is intended that PAFEC75 will eventually be mounted on a dedicated PAFEC/GRAPIICS computer, hopefully at the end of 1978.

4. Whilst PAFEC75 is well documented (Refs. 2, 3 and 4) it is the variation implemented on the 1904S* that is described as far as the user is concerned. The method of implementation is described elsewhere (Ref. 5). It is also assumed that the user is already able to use the computer. (Ref. 6).

THE SYSTEM

5. PAFEC75 uses a series of 10 phases each loading a program. The data is in modular form and if some parts are omitted default values are used. The phases are described in the table below.

Phase	Short description	Detailed description
1	Read	Data modules are read in, default values are inserted and the modules are placed onto backing store. The NODES module is expanded so that all mid-side nodes are included.
2	PAFBLOCKS	Any PAFBLOCK data is replaced by the full nodal co-ordinate and topological description of the complete mesh of elements.
3	IN.DRAW structure	The structure itself is drawn. At this stage it is not possible to show any results such as displacements, stresses or temperatures since these have not yet been evaluated.
4	Pre-solution housekeeping	In this PHASE the constraints on the problem are considered and a numbering system for the degrees of freedom is derived.
5	IN.DRAW constraints	This PHASE is very similar to the PHASE 3 except of course the constraints which have been applied are shown. Conversely the degrees of freedom can be indicated on a drawing.
6	Elements	The stiffness (or other such as conductivity, mass etc.) matrices of all the elements are found and put onto backing store.

Table (Cont'd)

Phase	Short description	Detailed description
7	Solution	The system equations are solved for displacements, temperatures or whatever happens to be the primary unknowns in the problem being tackled.
8	OUT.DRAW displacements	The primary unknowns in the problem (i.e. displacements or temperatures) are drawn.
9	STRESS	The stresses are found.
10	OUT.DRAW stresses	Stress contour, stress vector plate etc. are produced.

6. In the system at A.U.W.E., programs have been compiled in advance and use made of a facility for increasing the core requirement of a program whilst running in order to enlarge an array BASE (which is used by most routines and whose size depends on the problem). Due to the limitation of 150K core size, imposed by the installation manager, the greatest possible size of BASE (at its maximum in phase 7) is 55000. It is hoped that the dedicated computer will have a paged environment thus allowing larger sizes of BASE. This system of pre-compiled programs reduces the time taken for each job. It does however assume that certain element combinations are excluded.

7. The elements are taken from a library (Refs. 3, 4) and are mainly broken up into 5 categories:

- a. Beam elements.
- b. Plane stress, plane strain and axisymmetric elements (2D).
- c. Plate bending and flat faced shell elements (SHELL).
- d. Three dimensional solid elements (3D).
- e. Temperature or Laplacian elements (THERMAL).

The only combination assumed is between beam and shell elements which have a combined program. Any other combination will require a program to be specially written together with a macro to run it. This can be done by JCA1 staff at A.U.W.E. if required.

8. PAFBLOCKs (Phase 2) is a system whereby a mesh of finite elements can be created by specifying the topology of a block and the layout of the mesh in the block (Refs. 3, 4).

9. Using the series of phases enables the job to be stopped at certain stages. These usually coincide with a plotting phase so that the drawing can be inspected for any curious element distortions etc. It is also possible to run phases 6 and 7 on their own as they are those which involve the most computer time and core size in their execution and this enables the longer jobs to run.

10. At the time of writing this guide it is EASIDATA only (Ref. 3) which is implemented. This should be sufficient for most users but it is hoped that the full DATA system (Ref. 4) will be implemented later. Whether this will be on the 1904S* or the dedicated computer will depend on the time scale and demand.

PREPARATION OF DATA

11. The written programs preclude the USE. and READ.FROM. facilities (Refs. 3, 4). The USE. facility would require a specially written program. The READ.FROM. facility is catered for in one of the parameters to the macro to run the system. Also the control of the phasing is done by parameters to the running macro and not by means of PHASE and SAVE commands in the CONTROL module (Refs. 3, 4).

12. Apart from these limitations the data is prepared in the same format as shown in the manuals (Refs. 3, 4). There are two points to make however. It is preferable that the CONTROL module is the first in the data and the FAST. READ facility does not give such a benefit in speed of reading and will not allow continuation lines.

RUNNING PAFEC75

13. Three macros are used in the system. These are RUN75 and CLEAR75 which are only used for PAFEC75 and PLOTMAC which is used in common with PAFEC70+ (Ref. 1).

14. RUN75, as might be expected, runs the system and has the following parameters:

- DATA <filename> : Where <filename> is the data file. Note that the absolute name is required if the file is not in <account> specified by DY below. This parameter is only required for Phase 1 and is ignored in other phases.
- OUT <ident> : Where <ident> is a string of up to 8 characters on which the output file names are to be based. If this parameter is absent the job identifier (or the first 8 characters if more than 8) is used.
- DY <account> : Where account is that in which the files are to be created. The account must exist and be available to the user. This parameter is not needed when running in the main account. It facilitates the erasure of files later (but see CLEAR75 below).
- STn : Where n is the phase at which the job is to start. If omitted the job tries to start at Phase 1.
- PLn : Where n is the number of the plot phase required. Such a parameter is required for each plot phase required unless STn above denotes a plot phase.
- ENDn : Where n is the last phase required.
- BLOCK : When PAFBLOCKS (Phase 2) are being used. Not needed if ST2 is used.

6.

2D)
3D)
BSH)
THERMAL):

One of these is required to indicate which type of element is being used in Phases 6 and 9. If omitted 2D is assumed.

DYNAMIC)
STATIC)
THERMAL):

One of these is required to indicate the type of solution (Phase 7). Of course for thermal work the parameter is the same as for Phases 6 and 9 so only one is required! If omitted STATIC is assumed. They can all be contracted to the first three characters. (i.e. DYN, STA, THE).

- JTn : Where n is the total job time required. By default 10 minutes (the system default).
- TIn : Where n is the program time required for each phase. By default 300 seconds (5 mins). This time is carried into PLOTMAC if used.
- BASEn : Where n is the size of base required. By default 5000 is assumed.
- CLEAR : This sets up a call to CLEAR75 (para. 17) which clears out the files created, except for those output for graph plotting. This can be shortened to CL.
- SAVE : Saves the magnetic tape file(s) carrying information between Phases 6 and 7 which are normally erased. (Para. 24). SV can be used.
- LIST : Causes the large number of output files to be listed on the line printer. Normally only those for Phases 7 and 9 (results) or the current file at any failure are listed. LI can be used.
- NEJ : Suppresses the issuing of ENDJOB in a successful background job. Ignored in the event of any error. (It is assumed that the rest of the job depends on a successful run!!).
- RETAIN : Retains the monitor file in the event of an ENDJOB issued by the macro. (See para. 26). RET or RT can be used.

15. There are only two restrictions in the order of the above parameters:

- a. The DY parameter should precede DYNAMIC (or DYN) (if present).
- b. The ST parameter should precede STATIC (or STA) (if present).

Apart from these restrictions the parameters can be in any order.

16. The formidable list of parameters should not frighten users! They are not all necessary at once. In fact for a static, 2D analysis run in the main account with BASE less than 5000, job time less than ten minutes (and presumably progtme less than five mimutes), no plotting, no pafblocks and no retained monitor file the command needs to be:

RJ <ident>, :<account>,RUN75,PARAM(DATA<filename>)

However if more than 5 or 6 parameters are needed it is preferable, when adding a job to the operators' background queue, to set up the call in a small file i.e.

IN FILENAME

RUN75 DATA PAFDAT,OUT PAFANS,BLOCK,PL3,END3,BASE 10000,RT,JT 900,DY<account>

Then

RJ <ident>, <account>, FILENAME (where <account> here is the main account)

This facilitates the task of the operators when issuing jobs from their background queue.

17. CLEAR75 is responsible for dealing with the debris left by RUN75. It is able to cope with the remains of more than one job and requires the following parameters:

/<ident> : The identifier used in creating the files.

DY<account>: Causes the erasure to take place in the appropriate pseudo account.

PLOT : Causes the erasure of associated redundant plot files. These are not usually erased, in case of plotter/computer failure.

18. The first two parameters can be repeated as necessary. If all the files are in one pseudo account only one DY is needed. Otherwise one is needed paired with each /parameter. For example.

CLEAR75 /UBFSB01,DY:XYZA,DY:XYZB,/UBFSB02
would clear all files based on UBFSB01 in :XYZA
and UBFSB02 in :XYZB

CLEAR75 /UBFSB01,DY:XYZA,DY:XYZB,/UBFSB02,/UBFSB03
would clear all files based on UBFSB01 in :XYZA
UBFSB02 in :XYZB
and UBFSB03 in :XYZB

19. PLOTMAC is called from inside RUN75 but can also be called by the user. Its use is described elsewhere (Ref. 1). There is one modification that has now been made, no real mag tapes are used and a series of pseudo mag tape files is set up. This has no direct effect on the user but makes the life of the computer staff a lot easier!!

20. One modification made at A.U.W.E. is to check on the maximum size of BASE used (as opposed to that asked for!). This is noted at the end of the output for each phase and listed to the monitor file (see para. 29 and Appendix A pp1 and 9) and also affords a check on the size of BASE obtained (which is not always the same as that asked for due to limitations on core size).

21. In the event of any program failure the macro RUN75 is ended (a background job is terminated even if NEJ is present) and the current output file (if one exists) is listed on the line printer.

FILES CREATED

22. TR<Ident> is the line printer output file. It has a generation number corresponding to the phase and a language code ANSA. If the first file for any phase becomes full (either due to the limit of 8192 transfers or physical size) a second file is assigned with code ANSB - and so on up to ANSZ.

23. B<Ident>S is the disc file containing backing store information (referred to as BS in literature). It is 240 kwords long. After each phase is run B<Ident>S is copied into H<Ident>S. In the event of a successful run H<Ident>S is erased but in the event of failure (usually due to BASE being too small or the time being insufficient) it is left in the filestore to be copied back by the macro before the phase is rerun. This has been found to be necessary as a restart may find B<Ident>S changed!!

24. M<Ident>T is a pseudo mag tape file to carry information between phases 6 and 7. If this file is nearly filled, a second is assigned from inside the program and so on. The language code of the first file is FIRS, subsequent codes are AAMT-AZMT-BAMT-BZMT-CAMT and so on to ZZMT thus catering for 677 files. Usually erased after Phase 7 is run but see SAVE parameter for RUN75 (para. 14).

25. Z<Ident>Qn is the card image file output by each plot phase to be presented to PLOTMAC where n denotes the phase i.e. Z<Ident>Q3 for Phase 3. It is the file from Phase 10 which sets the limit of 8 characters on <Ident> (from the limit of 12 characters for a filename). These files can have more than one generation number due to the card image file being filled.

26. M<Ident>N is the retained monitor file name.

27. It should be remembered that <Ident> is normally the job identifier unless OUT is being used and the files are all created in the pseudo account (if any) in which the job is run.

EXAMPLE OF RUN

28. The monitor file of the run and the listings of the output from the phases are to be found in Appendix A. The monitor file (pp A1-A3) shows the contents of :AAHC before the run (p A1), the effect of NEJ, the contents of :AAHC after the run (p A3) noting that the job is now in :AAHC. Then the effect of CLEAR75 can be seen when the LD command shows that the only files left are the data file and plotter output file. A further use of CLEAR75 with the PLOT parameter clears the plot file as well. RUN75 without any ST and DATA parameters gives rise to the DISPLAY and the job is terminated. Another RUN75 with DATAORB was included in the macro which would have given rise to the DISPLAY DATA FILE DOES NOT EXIST.

29. It can also be seen from the monitor file that the maximum size of BASE used was 2990 in Phase 9 (p A3) followed by 2022 in Phase 8 (p A2), 1851 in Phase 6 (p A2) and 1759 in Phase 7 (p A2). From page A1 it can be seen that the size required in Phase 1 is only 131.

30. The plot of the displaced shape from Phase 8 can be seen in Fig. 1. From the output from Phase 8 (p A31) the SCALE OF DISPLACEMENTS should be 0.994E-5 per cm. There is also some sorting of the layout of the labelling in the bottom right hand corner which will have to be done.

31. It should be noted that without the LI parameter the only listings (apart from the monitor file) would be from Phase 7 (pp A22-A27) and Phase 9 (pp A33 - A43) a total of 17 pages instead of 40.

REFERENCESReference

- 1 PAFEC on the A.U.W.E. ICL 1904S* Computer.
W. J. Butterworth, A.U.W.E. Publication 43584, May 1977 (U/U).
- 2 PAFEC75 Theory and Results.
R. D. Henshell (ed.), PAFEC Ltd., December 1975.
- 3 PAFEC75 EASIDATA.
R. D. Henshell (ed), PAFEC Ltd., September 1976.
- 4 PAFEC75 DATA.
R. D. Henshell (ed.), PAFEC Ltd., April 1976.
- 5 PAFEC75 on the A.U.W.E. ICL 1904S* - Implementation and its problems.
W. J. Butterworth, A.U.W.E. To be issued. 1978 (C-in-C).
- 6 AUWE Computer Service User Guide.
AUWE Publication 31904 3rd ed June 1976 (U).

APPENDIX A

OUTPUT FROM EXAMPLE RUN

(A1-A43)

A.1

AMERICAN AIRLINES AIRPORTS SYSTEM INC. PRODUCED UN 21MAKRS AT 08.47.24

#OUTPUT BY LISTFILE IN :AAH.UJCHRS0. ON 21MAR88 AT 08:47:25 USING U14

STARTED 2/24/44 IN CURR O-21 MARKS 08.24.44 TYPE: BALK
08.24.44 + HJ INCHES, TESTER AF
16/5/78 DUE TO CORROSION A GENERAL RESTORE HAS BEEN DONE FROM
RUMP TAKEN AT 16-21 ON 15/3/70. ALL WORK AFTER THIS TIME LOST.
08.24.44 TESTER AF
08.24.44 LD : AAMH
08.24.44 LF :

LIST OF LISTING OF DIRECTORY : AAHC

卷之三

```

FILE: SPHERET 1
08.2/.4-.49* RUN#1 DYAAMH, DATA$PHRE, QUITPBB, LT, NTFJ, PLCK, PLK
08.2/.4-.49* TA AB, CNECT
DISPLAY: **** DATA FILE SPHERE ****

DISPLAY: **** PHASE 1
08.2/.4-.51 USED URGENCY M
08.2/.4-.45 U.01 CORE GIVEN 410KA
08.2/.4-.45 FREE *DAZ *371 TRANSFERS
08.2/.4-.45 FREE *CRJ *55 TRANSFERS
08.2/.4-.45 FREE *CRI *1 TRANSFERS
08.2/.4-.45 FREE *DAI *21 TRANSFERS
08.2/.4-.46 FREE *LPU *16 TRANSFERS
DISPLAY: 1
01.13 : DELETED : 00
08.2/.4-.46 FREE *DAU 112 TRANSFERS
08.2/.4-.46 0.14 DELETED, CLOCKED 0.05
DISPLAY: END OF PHASE 1
**** MAX SIZE OF BASE USED 151
SET TO

```

```

DISPLAY: **** PHASE 2
          08.25.46 0.17 CORE GIVEN $19.36
          08.25.22 FREE *DAZ .29 TRANSFERS
          08.29.27 FREE *LPU .16K TRANSFERS
DISPLAY: 11
0.25 :REFLECTED : 00
          08.29.28 FREE *DAZ .74 TRANSFERS
          08.29.28 0.25 UNREFLECTED, CLICKED U.03
DISPLAY: END OF PHASE 2
***** MAX SIZE OF BASE USED 1552

```


DISPLAY: *** TURBOS PLUT FILE RETAINED ***

DISPLAY: *** PHASE Y

08.45.00 2.50 USED UNIVER.CY M

08.45.00 2.50 USED GIVEN CYCLOS

08.45.00 FREE *DAZ *GU TRANSFERS

08.45.05 FREE *LPJ ,5/5 TRANSFERS

DISPLAY: 11

3.18 DELETED : GU

08.45.59 FREE *DAU ,4/5 TRANSFERS

08.45.59 3.18 DELETED,LOCKED U,18

DISPLAY: END OF PHASE Y

*** MAX SIZE OF BASE USED 2990

SET TO SUUG

08.46.40+ LD

08.46.40+ LF 1

LISDIR LISTING OF DIRECTORY :AAMC

TYPE NAME GEN.NO. LANG. REEL.NO. SERIAL NO.

FILE DURBS 1

FILE TRURB 9 ANSA

FILE TRURB 3 ANSA

FILE TRURB 7 ANSA

FILE TRURB 6 ANSA

FILE TRURB 4 ANSA

FILE TRURB 2 ANSA

FILE SPHERE 1

FILE ZORG3 1

FILE 08.46.30+ CLEARS75 /ORB

08.46.31+ TA AB,CM,CT

08.47.06+ LD

08.47.08+ LF 1

LISDIR LISTING OF DIRECTORY :AAMC

TYPE NAME GEN.NO. LANG. REEL.NO. SERIAL NO.

FILE SPHERE 1

FILE ZORG3 1

08.47.09+ CLEARS75 /ORB,PLUT

08.47.10+ TA AB,CM,CT

08.47.17+ LD

08.47.19+ LF 1

LISDIR LISTING OF DIRECTORY :AAMC

TYPE NAME GEN.NO. LANG. REEL.NO. SERIAL NO.

FILE SPHERE 1

08.47.19+ RUN75

08.47.19+ TA AB,CM,CT

DISPLAY: *15** DATA PARAMETER MISSING &**15**

MAXIMUM ONLINE RS USED 494 KWORDS

08.47.22 3.27 FINISHED :AAMCUWB0 : 6 LISTFILES

:AAH.UJCWB#U

#LISTING OF :AAH.C.IRUBC(1/ANSA) PRODUCED ON 21MARCH AT 08:27:40

#OUTPUT BY LISFILE IN 'IAAH.UJCWB#U' ON 21MARCH AT 08:27:49 USING U14

DOCUMENT

IRUBC(1/ANSA)

LEVEL 1.3 - OCTOBER 1977

卷之三

```

1 CNTPLOL
2 AXISMMETRIC
3 LONTUL,END
4 C
5 C
6 C
7 TITLE CHECK ON PAIRBLOCKS FOR SPHERE
8 C
9 C 20 - 56210 ELEMENTS IN AXISMMETRIC REPRESENTATION OF SPHERE
10 C PRESSURE APPLIED TO OUTER SURFACE
11 C
12 C DISPLACEMENTS ARE :
13 C NODE UX UY
14 C 1 1.9826 *
15 C 2 1.8934 *
16 C 5 * -1.9801
17 C 4 * -1.0876
18 C 3 -1.9828 *
19 C 6 1.8934 *
20 C 7 1.8917 -0.0984 )SYMMETRICAL ABOUT X=0
21 C 64 -1.8917 -0.0984 )
22 C
23 C DIVISION FACTOR FOR ABOVE 0.1E6
24 C
25 C
26 NODES
27 NODE NUMBER,X,Y
28 1,-0.95,0
29 2,-1.00,0
30 3,0,0.95
31 4,0,1.00
32 5,0,0.95,0
33 6,1.00,0
34 PAIRBLOCKS
35 PROPEA
36 ELEMENT,N1,N2,TUPOL
37 56210,2,1,2,6,15,4,0,0,3
38 MESH
39 1,1
40 C
41 C THE FOLLOWING CAN BE CHANGED TO SET
42 C UP NODE ELEMENTS ROUND THE CIRCUMFERENCE
43 C,50
44 C
45 PLAT
46 4,4
47 RESTRAINTS
48 1,2,1,2
49 4,1,1,1
50 PRESSURE
51 1,202.0E3,0,041,2,4
52 C TWO ATMOSPHERES ON OUTSIDE SURFACE ???
53 END,OF,DATA
54
55
56
57
58
59
60
61
62
63
64
65
66
67
68
69
70
71
72
73
74
75
76
77
78
79
80
81
82
83
84
85
86
87
88
89
90
91
92
93
94
95
96
97
98
99
100
101
102
103
104
105
106
107
108
109
110
111
112
113
114
115
116
117
118
119
120
121
122
123
124
125
126
127
128
129
130
131
132
133
134
135
136
137
138
139
140
141
142
143
144
145
146
147
148
149
150
151
152
153
154
155
156
157
158
159
160
161
162
163
164
165
166
167
168
169
170
171
172
173
174
175
176
177
178
179
180
181
182
183
184
185
186
187
188
189
190
191
192
193
194
195
196
197
198
199
200
201
202
203
204
205
206
207
208
209
210
211
212
213
214
215
216
217
218
219
220
221
222
223
224
225
226
227
228
229
230
231
232
233
234
235
236
237
238
239
240
241
242
243
244
245
246
247
248
249
250
251
252
253
254
255
256
257
258
259
260
261
262
263
264
265
266
267
268
269
270
271
272
273
274
275
276
277
278
279
280
281
282
283
284
285
286
287
288
289
290
291
292
293
294
295
296
297
298
299
300
301
302
303
304
305
306
307
308
309
310
311
312
313
314
315
316
317
318
319
320
321
322
323
324
325
326
327
328
329
330
331
332
333
334
335
336
337
338
339
340
341
342
343
344
345
346
347
348
349
350
351
352
353
354
355
356
357
358
359
360
361
362
363
364
365
366
367
368
369
370
371
372
373
374
375
376
377
378
379
380
381
382
383
384
385
386
387
388
389
390
391
392
393
394
395
396
397
398
399
400
401
402
403
404
405
406
407
408
409
410
411
412
413
414
415
416
417
418
419
420
421
422
423
424
425
426
427
428
429
430
431
432
433
434
435
436
437
438
439
440
441
442
443
444
445
446
447
448
449
450
451
452
453
454
455
456
457
458
459
460
461
462
463
464
465
466
467
468
469
470
471
472
473
474
475
476
477
478
479
480
481
482
483
484
485
486
487
488
489
490
491
492
493
494
495
496
497
498
499
500
501
502
503
504
505
506
507
508
509
510
511
512
513
514
515
516
517
518
519
520
521
522
523
524
525
526
527
528
529
530
531
532
533
534
535
536
537
538
539
540
541
542
543
544
545
546
547
548
549
550
551
552
553
554
555
556
557
558
559
560
561
562
563
564
565
566
567
568
569
570
571
572
573
574
575
576
577
578
579
580
581
582
583
584
585
586
587
588
589
589
590
591
592
593
594
595
596
597
598
599
600
601
602
603
604
605
606
607
608
609
610
611
612
613
614
615
616
617
618
619
620
621
622
623
624
625
626
627
628
629
630
631
632
633
634
635
636
637
638
639
640
641
642
643
644
645
646
647
648
649
650
651
652
653
654
655
656
657
658
659
660
661
662
663
664
665
666
667
668
669
669
670
671
672
673
674
675
676
677
678
679
679
680
681
682
683
684
685
686
687
688
689
689
690
691
692
693
694
695
696
697
698
699
700
701
702
703
704
705
706
707
708
709
709
710
711
712
713
714
715
716
717
718
719
719
720
721
722
723
724
725
726
727
727
728
729
729
730
731
732
733
734
735
736
737
737
738
739
739
740
741
742
743
744
745
746
747
748
749
749
750
751
752
753
754
755
756
757
758
759
759
760
761
762
763
764
765
766
767
768
769
769
770
771
772
773
774
775
776
777
778
779
779
780
781
782
783
784
785
786
787
788
789
789
790
791
792
793
794
795
796
797
798
799
800
801
802
803
804
805
806
807
808
809
809
810
811
812
813
814
815
816
817
818
819
819
820
821
822
823
824
825
826
827
828
829
829
830
831
832
833
834
835
836
837
838
839
839
840
841
842
843
844
845
846
847
848
849
849
850
851
852
853
854
855
856
857
858
859
859
860
861
862
863
864
865
866
867
868
869
869
870
871
872
873
874
875
876
877
878
879
879
880
881
882
883
884
885
886
887
888
889
889
890
891
892
893
894
895
896
897
898
899
900
901
902
903
904
905
906
907
908
909
909
910
911
912
913
914
915
916
917
918
919
919
920
921
922
923
924
925
926
927
928
929
929
930
931
932
933
934
935
936
937
938
939
939
940
941
942
943
944
945
946
947
948
949
949
950
951
952
953
954
955
956
957
958
959
959
960
961
962
963
964
965
966
967
968
969
969
970
971
972
973
974
975
976
977
978
979
979
980
981
982
983
984
985
986
987
988
989
989
990
991
992
993
994
995
996
997
998
999
1000
1001
1002
1003
1004
1005
1006
1007
1008
1009
1009
1010
1011
1012
1013
1014
1015
1016
1017
1018
1019
1019
1020
1021
1022
1023
1024
1025
1026
1027
1028
1029
1029
1030
1031
1032
1033
1034
1035
1036
1037
1038
1039
1039
1040
1041
1042
1043
1044
1045
1046
1047
1048
1049
1049
1050
1051
1052
1053
1054
1055
1056
1057
1058
1059
1059
1060
1061
1062
1063
1064
1065
1066
1067
1068
1069
1069
1070
1071
1072
1073
1074
1075
1076
1077
1078
1079
1079
1080
1081
1082
1083
1084
1085
1086
1087
1088
1089
1089
1090
1091
1092
1093
1094
1095
1096
1097
1098
1099
1100
1101
1102
1103
1104
1105
1106
1107
1108
1109
1109
1110
1111
1112
1113
1114
1115
1116
1117
1118
1119
1119
1120
1121
1122
1123
1124
1125
1126
1127
1128
1129
1129
1130
1131
1132
1133
1134
1135
1136
1137
1138
1139
1139
1140
1141
1142
1143
1144
1145
1146
1147
1148
1149
1149
1150
1151
1152
1153
1154
1155
1156
1157
1158
1159
1159
1160
1161
1162
1163
1164
1165
1166
1167
1168
1169
1169
1170
1171
1172
1173
1174
1175
1176
1177
1178
1179
1179
1180
1181
1182
1183
1184
1185
1186
1187
1188
1189
1189
1190
1191
1192
1193
1194
1195
1196
1197
1198
1199
1200
1201
1202
1203
1204
1205
1206
1207
1208
1209
1209
1210
1211
1212
1213
1214
1215
1216
1217
1218
1219
1219
1220
1221
1222
1223
1224
1225
1226
1227
1228
1229
1229
1230
1231
1232
1233
1234
1235
1236
1237
1238
1239
1239
1240
1241
1242
1243
1244
1245
1246
1247
1248
1249
1249
1250
1251
1252
1253
1254
1255
1256
1257
1258
1259
1259
1260
1261
1262
1263
1264
1265
1266
1267
1268
1269
1269
1270
1271
1272
1273
1274
1275
1276
1277
1278
1279
1279
1280
1281
1282
1283
1284
1285
1286
1287
1288
1289
1289
1290
1291
1292
1293
1294
1295
1296
1297
1298
1299
1300
1301
1302
1303
1304
1305
1306
1307
1308
1309
1309
1310
1311
1312
1313
1314
1315
1316
1317
1318
1319
1319
1320
1321
1322
1323
1324
1325
1326
1327
1328
1329
1329
1330
1331
1332
1333
1334
1335
1336
1337
1338
1339
1339
1340
1341
1342
1343
1344
1345
1346
1347
1348
1349
1349
1350
1351
1352
1353
1354
1355
1356
1357
1358
1359
1359
1360
1361
1362
1363
1364
1365
1366
1367
1368
1369
1369
1370
1371
1372
1373
1374
1375
1376
1377
1378
1379
1379
1380
1381
1382
1383
1384
1385
1386
1387
1388
1389
1389
1390
1391
1392
1393
1394
1395
1396
1397
1398
1399
1400
1401
1402
1403
1404
1405
1406
1407
1408
1409
1409
1410
1411
1412
1413
1414
1415
1416
1417
1418
1419
1419
1420
1421
1422
1423
1424
1425
1426
1427
1428
1429
1429
1430
1431
1432
1433
1434
1435
1436
1437
1438
1439
1439
1440
1441
1442
1443
1444
1445
1446
1447
1448
1449
1449
1450
1451
1452
1453
1454
1455
1456
1457
1458
1459
1459
1460
1461
1462
1463
1464
1465
1466
1467
1468
1469
1469
1470
1471
1472
1473
1474
1475
1476
1477
1478
1479
1479
1480
1481
1482
1483
1484
1485
1486
1487
1488
1489
1489
1490
1491
1492
1493
1494
1495
1496
1497
1498
1499
1500
1501
1502
1503
1504
1505
1506
1507
1508
1509
1509
1510
1511
1512
1513
1514
1515
1516
1517
1518
1519
1519
1520
1521
1522
1523
1524
1525
1526
1527
1528
1529
1529
1530
1531
1532
1533
1534
1535
1536
1537
1538
1539
1539
1540
1541
1542
1543
1544
1545
1546
1547
1548
1549
1549
1550
1551
1552
1553
1554
1555
1556
1557
1558
1559
1559
1560
1561
1562
1563
1564
1565
1566
1567
1568
1569
1569
1570
1571
1572
1573
1574
1575
1576
1577
1578
1579
1579
1580
1581
1582
1583
1584
1585
1586
1587
1588
1589
1589
1590
1591
1592
1593
1594
1595
1596
1597
1598
1599
1600
1601
1602
1603
1604
1605
1606
1607
1608
1609
1609
1610
1611
1612
1613
1614
1615
1616
1617
1618
1619
1619
1620
1621
1622
1623
1624
1625
1626
1627
1628
1629
1629
1630
1631
1632
1633
1634
1635
1636
1637
1638
1639
1639
1640
1641
1642
1643
1644
1645
1646
1647
1648
1649
1649
1650
1651
1652
1653
1654
1655
1656
1657
1658
1659
1659
1660
1661
1662
1663
1664
1665
1666
1667
1668
1669
1669
1670
1671
1672
1673
1674
1675
1676
1677
1678
1679
1679
1680
1681
1682
1683
1684
1685
1686
1687
1688
1689
1689
1690
1691
1692
1693
1694
1695
1696
1697
1698
1699
1699
1700
1701
1702
1703
1704
1705
1706
1707
1708
1709
1709
1710
1711
1712
1713
1714
1715
1716
1717
1718
1719
1719
1720
1721
1722
1723
1724
1725
1726
1727
1728
1729
1729
1730
1731
1732
1733
1734
1735
1736
1737
1738
1739
1739
1740
1741
1742
1743
1744
1745
1746
1747
1748
1749
1749
1750
1751
1752
1753
1754
1755
1756
1757
1758
1759
1759
1760
1761
1762
1763
1764
1765
1766
1767
1768
1769
1769
1770
1771
1772
1773
1774
1775
1776
1777
1778
1779
1779
1780
1781
1782
1783
1784
1785
1786
1787
1788
1789
1789
1790
1791
1792
1793
1794
1795
1796
1797
1798
1799
1799
1800
1801
1802
1803
1804
1805
1806
1807
1808
1809
1809
1810
1811
1812
1813
1814
1815
1816
1817
1818
1819
1819
1820
1821
1822
1823
1824
1825
1826
1827
1828
1829
1829
1830
1831
1832
1833
1834
1835
1836
1837
1838
1839
1839
1840
1841
1842
1843
1844
1845
1846
1847
1848
1849
1849
1850
1851
1852
1853
1854
1855
1856
1857
1858
1859
1859
1860
1861
1862
1863
1864
1865
1866
1867
1868
1869
1869
1870
1871
1872
1873
1874
1875
1876
1877
1878
1879
1879
1880
1881
1882
1883
1884
1885
1886
1887
1888
1889
1889
1890
1891
1892
1893
1894
1895
1896
1897
1898
1899
1899
1900
1901
1902
1903
1904
1905
1906
1907
1908
1909
1909
1910
1911
1912
1913
1914
1915
1916
1917
1918
1919
1919
1920
1921
1922
1923
1924
1925
1926
1927
1928
1929
1929
1930
1931
1932
1933
1934
1935
1936
1937
1938
1939
1939
1940
1941
1942
1943
1944
1945
1946
1947
1948
1949
1949
1950
1951
1952
1953
1954
1955
1956
1957
1958
1959
1959
1960
1961
1962
1963
1964
1965
1966
1967
1968
1969
1969
1970
1971
1972
1973
1974
1975
1976
1977
1978
1979
1979
1980
1981
1982
1983
1984
1985
1986
1987
1988
1989
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2019
2020
2021
2022
2023
2024
2025
2026
2027
2028
2029
2029
2030
2031
2032
2033
2034
2035
2036
2037
2038
2039
2039
2040
2041
2042
2043
2044
2045
2046
2047
2048
2049
2049
2050
2051
2052
2053
2054
2055
2056
2057
2058
2059
2059
2060
2061
2062
2063
2064
2065
2066
2067
2068
2069
2069
2070
2071
2072
2073
2074
2075
2076
2077
2078
2079
2079
2080
2081
2082
2083
2084
2085
2086
2087
2088
2089
2089
2090
2091
2092
2093
2094
2095
2096
2097
2098
2099
2099
2100
2101
2102
2103
2104
2105
2106
2107
2108
2109
2109
2110
2111
2112
2113
2114
2115
2116
2117
2118
2119
2119
2120
2121
2122
2123
2124
2125
2126
2127
2128
2129
2129
2130
2131
2132
2133
2134
2135
2136
2137
2138
2139
2139
2140
2141
2142
2143
2144
2145
2146
2147
2148
2149
2149
2150
2151
2152
2153
2154
2155
2156
2157
2158
2159
2159
2160
2161
2162
2163
2164
2165
2166
2167
2168
2169
2169
2170
2171
2172
2173
2174
2175
2176
2177
2178
2179
2179
2180
2181
2182
2183
2184
2185
2186
2187
2188
2189
2189
2190
2191
2192
2193
2194
2195
2196
2197
2198
2199
2199
2200
2201
2202
2203
2204
2205
2206
2207
2208
2209
2209
2210
2211
2212
2213
2214
2215
2216
2217
2218
2219
2219
2220
2221
2222
2223
2224
2225
2226
2227
2228
2229
2229
2230
2231
2232
2233
2234
2235
2236
2237
2238
2239
2239
2240
2241
2242
2243
2244
2245
2246
2247
2248
2249
2249
2250
2251
2252
2253
2254
2255
2256
2257
2258
2259
2259
2260
2261
2262
2263
2264
2265
2266
2267
2268
2269

```

ALL INPUT DATA MODULES FOLLOW AS STORED
ON BACKING STORE AT THE END OF PHASE 1.

	NAME	TYPE	GRAD	ELEM	PROP	N1	N2	N3	N4	N5
1	BLOC	1.0000	1.0000	36210.	4.0000	4.0000	1.0000	0.0000E+00	0.0000E+00	0.0000E+00
2	TEPO	0.0000	0.0000	5.0000	4.0000	0.0000E+00	0.0000E+00	3.0000		

	REFE	MESH
1	1.0000	SPAC
2	2.0000	50.000

	PLAT	MATE	PLATES	THIC
1	4.0000	4.0000	1.0000	

MATERIAL

	E	MU	RO	ALPH	MU	K	SH
1	1.0000	0.2090E+12	0.50000	7800.0	0.11000E+04	0.50000E+02	48.000
2	2.0000	0.1930E+12	0.50000	7700.0	0.12000E+04	0.50000E+02	44.500
3	3.0000	0.1250E+12	0.50000	7100.0	0.12000E+04	0.50000E+02	54.000
4	4.0000	0.6850E+11	0.53000	2692.0	0.24000E+04	0.10000E+01	38.000
5	5.0000	0.7000E+11	0.53000	2800.0	0.22000E+04	0.10000E+01	38.000
6	6.0000	0.7500E+11	0.53000	3000.0	0.20000E+04	0.10000E+01	190.00
7	7.0000	0.11000E+12	0.50000	4532.0	0.85000E+05	0.50000E+02	582.00
8	8.0000	0.6100E+11	0.25000	2226.0	0.72000E+05	0.20000E+01	8400.0
9	9.0000	0.36200E+10	0.45000	1250.0	0.60000E+04	0.50000E+01	8100.0
10	10.0000	0.30000E+11	0.00000E+00	2400.0	0.10000E+04	0.50000E+01	12000.0

	LOAD	PRES	SIAP	FINT	SITP	LIST
1	1.0000	0.20205E+06	0.0000	0.0000	1.0000	2.0000

	RESTRAINTS	PLAN	AXIS	DIME	VALU
1	4.00E	0.0000	1.0000	2.0000	0.0000E+00
2	1.0000	4.00E	1.0000	1.0000	0.0000E+00

NO ERRORS OR WARNINGS IN THIS PHASE

** END OF PHASE 1 **

**** MAX SIZE OF BCAST USED
SET TO 151
5000



*AAH.UJCWB#0

*LISTING OF :AAH.IRORB(Z/ANSAY PRODUCED ON 21MAR76 AT 08.29.ZF

#OUTPUT BY LISTFILE IN :AAH.UJCWB#0 ON 21MARCH AT 08.29.32 USING 014

DOCUMENT IRORB(Z/ANSAY)

LEVEL 1.3 - OCTOBER 1977

MODULE 1 GLOBAL COORDINATES

NODE	X	Y	Z	NODE	X	Y	Z	NODE	X	Y	Z
1	-0.9200	0.0000	0.0000	51	0.1432	0.6691	0.0000	52	0.1772	0.6295	0.0000
2	-1.0000	0.0000	0.0000	53	0.6191	0.2878	0.0000	54	0.6387	0.3466	0.0000
3	0.0000	0.9200	0.0000	55	0.6660	0.2000	0.0000	56	0.6910	0.4560	0.0000
4	0.0000	1.0000	0.0000	57	0.7135	0.4067	0.0000	58	0.7335	0.5384	0.0000
5	0.0000	0.9200	0.0000	59	0.7504	0.5090	0.0000	60	0.7658	0.5268	0.0000
6	0.0000	0.0000	0.9200	61	0.7780	0.4079	0.0000	62	0.7875	0.1565	0.0000
7	0.0000	0.0000	0.9200	63	0.7944	0.1046	0.0000	64	0.7985	0.0524	0.0000
8	0.0000	0.0000	0.9200	65	0.7985	-0.0751	0.0000	66	0.7695	0.1019	0.0000
9	0.0000	0.0000	0.9200	67	0.7535	0.2027	0.0000	68	0.7272	0.5013	0.0000
10	0.0000	0.0000	0.9200	69	0.6906	0.5996	0.0000	70	0.6444	0.4875	0.0000
11	0.0000	0.0000	0.9200	71	0.5881	0.2751	0.0000	72	0.4246	0.6524	0.0000
12	0.0000	0.0000	0.9200	73	0.0524	0.7246	0.0000	74	-0.2731	0.7660	0.0000
13	0.0000	0.0000	0.9200	75	-0.4875	0.6444	0.0000	76	-0.5966	0.6907	0.0000
14	0.0000	0.0000	0.9200	77	-0.5013	0.7275	0.0000	78	-0.4227	0.7537	0.0000
15	0.0000	0.0000	0.9200	79	-0.1019	0.6497	0.0000	80	0.0000	0.7750	0.0000
16	0.0000	0.0000	0.9200	81	0.0000	0.7677	0.0000	82	0.2027	0.7537	0.0000
17	0.0000	0.0000	0.9200	83	0.5013	0.7275	0.0000	84	0.5966	0.6907	0.0000
18	0.0000	0.0000	0.9200	85	0.4875	0.7660	0.0000	86	0.2731	0.7660	0.0000
19	0.0000	0.0000	0.9200	87	0.5966	0.6907	0.0000	88	0.5013	0.7275	0.0000
20	0.0000	0.0000	0.9200	89	0.4227	0.7537	0.0000	90	0.0000	0.7750	0.0000
21	0.0000	0.0000	0.9200	91	0.0000	0.7677	0.0000	92	0.2027	0.7537	0.0000
22	0.0000	0.0000	0.9200	93	0.5013	0.7275	0.0000	94	0.5966	0.6907	0.0000
23	0.0000	0.0000	0.9200	95	0.4875	0.7660	0.0000	96	0.2731	0.7660	0.0000
24	0.0000	0.0000	0.9200	97	0.5966	0.6907	0.0000	98	0.5013	0.7275	0.0000
25	0.0000	0.0000	0.9200	99	0.4227	0.7537	0.0000	100	0.0000	0.7750	0.0000
26	0.0000	0.0000	0.9200								

A 12

NUDE	X	Y	Z	X	Y	Z
101	-u. 91154	v. 2y556	v. 00000	128	0. 1975	0. y292
102	-u. 80668	v. 5465	v. 00000	129	0. 2459	0. y176
103	-u. 007b	v. 5064	v. 00000	130	0. 2935	0. y053
104	-u. 84664	v. 4.513	v. 00000	131	0. 5404	0. 6169
105	-u. m227	v. 4.750	v. 00000	132	0. 5864	0. 6672
106	-u. 7y0b	v. 5114	v. 00000	133	0. 4313	0. 6465
107	-u. f60b	v. 5284	v. 00000	134	0. 4750	0. 6267
108	-u. 7	v. 5y18	v. 00000	135	0. 2174	0. 1967
109	-u. 7ub0	v. 0.537	v. 00000	136	0. 2584	0. 1606
110	-u. 0.716	v. 6f77	v. 00000	137	0. 2974	0. 1565
111	-u. 6557	v. 7060	v. 00000	138	0. 0357	0. 0600
112	-u. 3y79	v. 7.583	v. 00000	139	0. 0714	0. 0717
113	-u. 5284	v. 7086	v. 00000	140	0. 0760	0. 0537
114	-u. 5174	v. 7y07	v. 00000	141	0. 383	0. 2978
115	-u. 4.67u	v. 8c77	v. 00000	142	0. 666	0. 2564
116	-u. 4.513	v. 8465	v. 00000	143	0. 968	0. 2174
117	-u. 5004	v. 8079	v. 00000	144	0. 6227	0. 4750
118	-u. 5404	v. 8089	v. 00000	145	0. 664	0. 4315
119	-u. 2y35	v. 9y35	v. 00000	146	0. 6776	0. 3864
120	-u. 2429	v. 9176	v. 00000	147	0. 868	0. 3403
121	-u. 1y75	v. 9.42	v. 00000	148	0. y034	0. 2456
122	-u. 1466	v. 9.583	v. 00000	149	0. 1y75	0. 2429
123	-u. 0yy3	v. 9.448	v. 00000	150	0. y291	0. 1975
124	-u. 0yy7	v. 9.407	v. 00000	151	0. y381	0. 1486
125	-u. 0yy7	v. 9.467	v. 00000	152	0. y446	0. 0995
126	-u. 0yy5	v. 9.448	v. 00000	153	0. y486	0. 0497
127	-u. 1466	v. 9.583	v. 00000			

MODULE NUMBER	TYPE	PROP	INT	TOPLOGY
17 - ELEMENTS				

END OF PAF BLOCKS GENERATION

NO FEATURES OR WARNINGS IN THIS PHASE

END OF PHASE C (PAFBULK DATA GENERATION)

***** MAX SIZE OF BASE USED 1552
SET TO 5000

1232 1561 1562

LEVEL 1.3 - OCTOBER 1977

TITLE CHECK ON PAIRBLOCKS FOR SPHERE
PHASE NUMBER 4 STAMIS HERE

PROGRAM TO GENERATE EXTRA DATA FOR GAUSSIAN REDUCTION SOLUTION

NUDE PLAN AXIS NIRE					
RESTRAINTS					
6	POINTS FOUND ON PLANE.	CASE	1	2	1
NUDES	1.	2.	6.	6,	2.
95.					
5	POINTS FOUND ON PLANE.	CASE	4	1	1
NUDES	3.	4.	6,	6,	1.

The following list row by row gives the instantaneous front size as each element is merged. The dimension of the stiffness matrix is the maximum value (plus the number of automatic masters in a dynamic analysis).

DIMENSION OF STIFFNESS MATRIX = 16

DEGREE OF FREEDOM NUMBERS AT NUDES

THE FOLLOWING INFORMATION MAY BE USED TO CHECK THAT CONSTRAINT DATA IS CORRECT

NODE NUMBER	1	2	3	4	5	6	7	8	9	10	11.	12.	13.	14.
D.O.F. N.U.	1.	2.	0.	0.	5.	6.	7.	9.	11.	13.	14.	15.	16.	17.
D.O.F. N.O.	0.	0.	3.	4.	0.	0.	6.	10.	14.	12.	13.	12.	11.	10.
NODE NUMBER	11	12	13	14	15	16	17	18	19	20	21.	22.	23.	24.
D.O.F. N.U.	15.	16.	17.	18.	19.	20.	21.	22.	23.	24.	25.	26.	27.	28.
D.O.F. N.O.	16.	17.	18.	19.	20.	21.	22.	23.	24.	25.	26.	27.	28.	29.
NODE NUMBER	21	22	23	24	25	26	27	28	29	30	31.	32.	33.	34.
D.O.F. N.U.	35.	36.	37.	38.	39.	40.	41.	42.	43.	44.	45.	46.	47.	48.
D.O.F. N.O.	36.	37.	38.	39.	40.	41.	42.	43.	44.	45.	46.	47.	48.	49.
NODE NUMBER	51	52	53	54	55	56	57	58	59	60	61.	62.	63.	64.
D.O.F. N.U.	55.	56.	57.	58.	59.	60.	61.	62.	63.	64.	65.	66.	67.	68.
D.O.F. N.O.	56.	57.	58.	59.	60.	61.	62.	63.	64.	65.	66.	67.	68.	69.
NODE NUMBER	41	42	43	44	45	46	47	48	49	50	51.	52.	53.	54.
D.O.F. N.U.	75.	76.	77.	78.	79.	80.	81.	82.	83.	84.	85.	86.	87.	88.
D.O.F. N.O.	76.	77.	78.	79.	80.	81.	82.	83.	84.	85.	86.	87.	88.	89.
NODE NUMBER	51	52	53	54	55	56	57	58	59	60	61.	62.	63.	64.
D.O.F. N.U.	95.	96.	97.	98.	99.	100.	101.	102.	103.	104.	105.	106.	107.	108.
D.O.F. N.O.	96.	97.	98.	99.	100.	101.	102.	103.	104.	105.	106.	107.	108.	109.
NODE NUMBER	61	62	63	64	65	66	67	68	69	70	71.	72.	73.	74.
D.O.F. N.U.	115.	116.	117.	118.	119.	120.	121.	122.	123.	124.	125.	126.	127.	128.
D.O.F. N.O.	116.	117.	118.	119.	120.	121.	122.	123.	124.	125.	126.	127.	128.	129.
NODE NUMBER	71	72	73	74	75	76	77	78	79	80	81.	82.	83.	84.
D.O.F. N.U.	134.	135.	136.	137.	138.	139.	140.	141.	142.	143.	144.	145.	146.	147.
D.O.F. N.O.	135.	136.	137.	138.	139.	140.	141.	142.	143.	144.	145.	146.	147.	148.
NODE NUMBER	81	82	83	84	85	86	87	88	89	90	91.	92.	93.	94.
D.O.F. N.U.	153.	154.	155.	156.	157.	158.	159.	160.	161.	162.	163.	164.	165.	166.
D.O.F. N.O.	154.	155.	156.	157.	158.	159.	160.	161.	162.	163.	164.	165.	166.	167.
NODE NUMBER	91	92	93	94	95	96	97	98	99	100	101.	102.	103.	104.
D.O.F. N.U.	173.	174.	175.	176.	177.	178.	179.	180.	181.	182.	183.	184.	185.	186.
D.O.F. N.O.	174.	175.	176.	177.	178.	179.	180.	181.	182.	183.	184.	185.	186.	187.
NODE NUMBER	101	102	103	104	105	106	107	108	109	110	111.	112.	113.	114.
D.O.F. N.U.	192.	193.	194.	195.	196.	197.	198.	199.	200.	201.	202.	203.	204.	205.
D.O.F. N.O.	193.	194.	195.	196.	197.	198.	199.	200.	201.	202.	203.	204.	205.	206.

NODE NUMBER	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	
D.U.F. NO.	212.	214.	216.	218.	220.	222.	224.	226.	228.	230.	232.	234.	236.	238.	240.	242.	244.	246.	248.	250.	252.	254.	256.	258.	260.	262.	264.	266.	268.	270.	
D.U.F. NO.	213.	215.	217.	219.	221.	223.	225.	227.	229.	231.	233.	235.	237.	239.	241.	243.	245.	247.	249.	251.	253.	255.	257.	259.	261.	263.	265.	267.	269.	271.	
6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NODE NUMBER	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	
D.U.F. NO.	272.	274.	276.	278.	280.	282.	284.	286.	288.	290.	291.	292.	294.	296.	298.	299.	281.	283.	285.	287.	289.	291.	292.	293.	294.	295.	296.	297.	298.	299.	291.
12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14
16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16
18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20
22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22
24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24
26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26
28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28
30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32
34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34
36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36
38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38
40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40
42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42
44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44	44
46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46
48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48
50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52
54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54
56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56
58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58
60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60
62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62

DEGREE OF FREEDOM ADDRESSES AND TAGS

	1	2	3	4	5	6	7	8	9	10																				
0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	
1	4.001	12.001	20.001	28.001	36.001	44.001	52.001	60.001	68.001	76.001	84.001	92.001	100.001	108.001	116.001	124.001	132.001	140.001	148.001	156.001	164.001	172.001	180.001	188.001	196.001	204.001	212.001	220.001	228.001	
2	9.001	19.001	29.001	39.001	49.001	59.001	69.001	79.001	89.001	99.001	109.001	119.001	129.001	139.001	149.001	159.001	169.001	179.001	189.001	199.001	209.001	219.001	229.001	239.001	249.001	259.001	269.001	279.001	289.001	
3	5.002	10.002	15.002	20.002	25.002	30.002	35.002	40.002	45.002	50.002	55.002	60.002	65.002	70.002	75.002	80.002	85.002	90.002	95.002	100.002	105.002	110.002	115.002	120.002	125.002	130.002	135.002	140.002	145.002	
4	4.002	8.002	12.002	16.002	20.002	24.002	28.002	32.002	36.002	40.002	44.002	48.002	52.002	56.002	60.002	64.002	68.002	72.002	76.002	80.002	84.002	88.002	92.002	96.002	100.002	104.002	108.002	112.002	116.002	
5	3.003	6.003	9.003	12.003	15.003	18.003	21.003	24.003	27.003	30.003	33.003	36.003	39.003	42.003	45.003	48.003	51.003	54.003	57.003	60.003	63.003	66.003	69.003	72.003	75.003	78.003	81.003	84.003	87.003	90.003
6	2.004	4.004	6.004	8.004	10.004	12.004	14.004	16.004	18.004	20.004	22.004	24.004	26.004	28.004	30.004	32.004	34.004	36.004	38.004	40.004	42.004	44.004	46.004	48.004	50.004	52.004	54.004	56.004	58.004	
7	1.005	2.005	3.005	4.005	5.005	6.005	7.005	8.005	9.005	10.005	11.005</td																			

2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
38
40
42
44
46
48
50
52
54
56
58
60
62

NO ERRORS OR WARNINGS IN THIS PHASE

FREEDOM GENERATION FOR SOLUTION COMPLETED

**** MAX SIZE OF BASE USED 1066
SET 10 5000

A18

```
#LISTING OF :AAHC, THURB(6/ANSI) PRODUCED ON 21MAY80 AT 08.35.45
#OUTPUT BY LISTFILE IN ':AAHC.UJCWB/U' ON <1MAKES AT 08.35.47 USING U14
DOCUMENT THURB(6/ANSI)
```

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62

PPP	AAA	FFF	EEE	CCC	UUU	SSS
P P	A A	A FF	E E	C CC	U U	S S
P P	P A	A FF	E E	C CC	U U	S S
P P	P A	A FF	E E	C CC	U U	S S
P P	AAA	FFF	EEE	C	UUU	SSS
P P	AA	A F	EE	C	UU	S S
P P	AA	A F	EE	C	UU	S S
P P	AA	A F	EE	C	UU	S S
P P	AA	A F	EE	C	UU	S S
P P	AA	A F	EE	C	UU	S S
P P	AA	A F	EE	CCC	UUU	SSS
P P	AA	A F	EE	CCC	UUU	SSS

LEVEL 1.3 * OCTOBER 1977

TITLE CHECK ON PAFFBLOCKS FOR SPHERE
PHASE NUMBER 6 STAKES HERE

ELEMENT NUMBER	GROUP NUMBER	ELEMENT TYPE	PROPERTY NUMBER	MATERIAL NUMBER
1	1	56210	4	4
2	1	56210	4	4
3	1	56210	4	4
4	1	56210	4	4
5	1	56210	4	4
6	1	56210	4	4
7	1	56210	4	4
8	1	56210	4	4
9	1	56210	4	4
10	1	56210	4	4
11	1	56210	4	4
12	1	56210	4	4
13	1	56210	4	4
14	1	56210	4	4
15	1	56210	4	4
16	1	56210	4	4
17	1	56210	4	4
18	1	56210	4	4

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62

A21 2
0 4
0 6
0 8
0 10
0 12
0 14
0 16
0 18
0 20
0 22
0 24
0 26
0 28
0 30
0 32
0 34
0 36
0 38
0 40
0 42
0 44
0 46
0 48
0 50
0 52
0 54
0 56
0 58
0 60
0 62

19 1 36210
20 1 36210
21 1 36210
22 1 36210
23 1 36210
24 1 36210
25 1 36210
26 1 36210
27 1 36210
28 1 36210
29 1 36210
30 1 36210
31 1 36210
32 1 36210
33 1 36210
34 1 36210
35 1 36210
36 1 36210
37 1 36210
38 1 36210
39 1 36210
40 1 36210
41 1 36210
42 1 36210
43 1 36210
44 1 36210
45 1 36210
46 1 36210
47 1 36210
48 1 36210
49 1 36210
50 1 36210
51 1 36210
52 1 36210
53 1 36210
54 1 36210
55 1 36210
56 1 36210
57 1 36210
58 1 36210
59 1 36210
60 1 36210
61 1 36210
62 1 36210

NO ERRORS OR WARNINGS IN THIS PHASE

***** END OF ELEMENT MATRIX GENERATION *****

***** MAX SIZE OF BASE USED SET TO 5000

1 A22 O 2
2 O 4 O 4
3 O 6 O 6
4 O 8 O 8
5 O 10 O 10
6 :AAH.UJCMB/0
7 :AAH.UJCMB/0
8 :AAH.UJCMB/0
9 :AAH.UJCMB/0
10 :AAH.UJCMB/0
11 :AAH.UJCMB/0
12 :AAH.UJCMB/0
13 :AAH.UJCMB/0
14 :AAH.UJCMB/0
15 :AAH.UJCMB/0
16 :AAH.UJCMB/0
17 :AAH.UJCMB/0
18 :AAH.UJCMB/0
19 :AAH.UJCMB/0
20 :AAH.UJCMB/0
21 :AAH.UJCMB/0
22 :AAH.UJCMB/0
23 :AAH.UJCMB/0
24 :AAH.UJCMB/0
25 :AAH.UJCMB/0
26 :AAH.UJCMB/0
27 :AAH.UJCMB/0
28 :AAH.UJCMB/0
29 :AAH.UJCMB/0
30 :AAH.UJCMB/0
31 :AAH.UJCMB/0
32 :AAH.UJCMB/0
33 :AAH.UJCMB/0
34 :AAH.UJCMB/0
35 :AAH.UJCMB/0
36 :AAH.UJCMB/0
37 :AAH.UJCMB/0
38 :AAH.UJCMB/0
39 :AAH.UJCMB/0
40 :AAH.UJCMB/0
41 :AAH.UJCMB/0
42 :AAH.UJCMB/0
43 :AAH.UJCMB/0
44 :AAH.UJCMB/0
45 :AAH.UJCMB/0
46 :AAH.UJCMB/0
47 :AAH.UJCMB/0
48 :AAH.UJCMB/0
49 :AAH.UJCMB/0
50 :AAH.UJCMB/0
51 :AAH.UJCMB/0
52 :AAH.UJCMB/0
53 :AAH.UJCMB/0
54 :AAH.UJCMB/0
55 :AAH.UJCMB/0
56 :AAH.UJCMB/0
57 :AAH.UJCMB/0
58 :AAH.UJCMB/0
59 :AAH.UJCMB/0
60 :AAH.UJCMB/0
61 :AAH.UJCMB/0
62 :AAH.UJCMB/0

#LISTING OF :AAH.UJCMB//ANSAL PRODUCED ON 21MAR/0 AT 08.38.10
#OUTPUT BY LISTFILE IN :AAH.UJCMB/0 ON 21MAR/0 AT 08.38.20 USING U14
DOCUMENT THURB//ANSAL

LEVEL 1.3 - OCTOBER 1977

2
 SCALED COORDINATES DIVIDE BY 1.00000
 * INDICATES A CONSTRAIN HAS BEEN APPLIED

NODE NO.	COORDINATES		DISPLACEMENTS		ROTATIONS		1	
	X	Y	Z	UX	UY	PHIX	PHIY	PHIZ
1	-0.95000	0.00000	0.00000	1	1.9038	*		
2	-1.00000	0.00000	0.00000	2	1.8932	*		
3	0.00000	0.95000	0.00000	3	*	-1.9801		
4	0.00000	1.00000	0.00000	4	*	-1.6876		
5	0.95000	0.00000	0.00000	5	-1.9858	*		
6	0.95000	0.00000	0.00000	6	-1.8932	*		
7	1.00000	0.00000	0.00000	7	1.8917	*		
8	0.95000	0.00000	0.00000	8	1.8852	*		
9	0.95000	0.00000	0.00000	9	1.8750	*		
10	0.95000	0.00000	0.00000	10	1.8546	*		
11	0.95000	0.00000	0.00000	11	1.8305	*		
12	0.95000	0.00000	0.00000	12	1.8004	*		
13	0.95000	0.00000	0.00000	13	1.7695	*		
14	0.95000	0.00000	0.00000	14	1.7358	*		
15	0.95000	0.00000	0.00000	15	1.6817	*		
16	0.95000	0.00000	0.00000	16	1.6334	*		
17	0.95000	0.00000	0.00000	17	1.5812	*		
18	0.95000	0.00000	0.00000	18	1.5250	*		
19	0.95000	0.00000	0.00000	19	1.4649	*		
20	0.95000	0.00000	0.00000	20	1.4011	*		
21	0.95000	0.00000	0.00000	21	1.3333	*		
22	0.95000	0.00000	0.00000	22	1.2625	*		
23	0.95000	0.00000	0.00000	23	1.1971	*		
24	0.95000	0.00000	0.00000	24	1.1095	*		
25	0.95000	0.00000	0.00000	25	1.0283	*		
26	0.95000	0.00000	0.00000	26	0.9441	*		
27	0.95000	0.00000	0.00000	27	0.8573	*		
28	0.95000	0.00000	0.00000	28	0.7681	*		
29	0.95000	0.00000	0.00000	29	0.6767	*		
30	0.95000	0.00000	0.00000	30	0.5854	*		
31	0.95000	0.00000	0.00000	31	0.4986	*		
32	0.95000	0.00000	0.00000	32	0.3924	*		
33	0.95000	0.00000	0.00000	33	0.2952	*		
34	0.95000	0.00000	0.00000	34	0.1975	*		
35	0.95000	0.00000	0.00000	35	0.0988	*		
36	0.95000	0.00000	0.00000	36	-0.0988	*		
37	0.95000	0.00000	0.00000	37	-0.1975	*		
38	0.95000	0.00000	0.00000	38	-0.2952	*		
39	0.95000	0.00000	0.00000	39	-0.3924	*		
40	0.95000	0.00000	0.00000	40	-0.4986	*		
41	0.95000	0.00000	0.00000	41	-0.5854	*		
42	0.95000	0.00000	0.00000	42	-0.6767	*		
43	0.95000	0.00000	0.00000	43	-0.7681	*		
44	0.95000	0.00000	0.00000	44	-0.8573	*		
45	0.95000	0.00000	0.00000	45	-0.9441	*		
46	0.95000	0.00000	0.00000	46	-1.0283	*		
47	0.95000	0.00000	0.00000	47	-1.1095	*		
48	0.95000	0.00000	0.00000	48	-1.1971	*		
49	0.95000	0.00000	0.00000	49	-1.2625	*		

SCALED COORDINATES
DIVIDE BY 1.0000

SCALED DISPLACEMENTS/ROTATIONS FOR LOAD CASE 1
* INDICATES A CONSTRAINT HAS BEEN APPLIED

	X	Y	Z	COORDINATES	NODE NO.	DISPLACEMENTS	DISPLACEMENTS	DISPLACEMENTS	DISPLACEMENTS	ROTATIONS	ROTATIONS
	X	Y	Z	COORDINATES	NO.	UX	UY	UZ	PHIX	PHIY	PHIZ
1	0.7072	0.7071	0	0.7072	50	-1.5335	-1.5330				
2	0.7432	0.6691	0	0.7432	51	-1.4011	-1.2610				
3	0.7772	0.6293	0	0.7772	52	-1.4049	-1.1056				
4	0.8071	0.5878	0	0.8071	53	-1.3250	-1.1072				
5	0.8387	0.5446	0	0.8387	54	-1.3812	-1.0461				
6	0.8660	0.5000	0	0.8660	55	-1.0534	-0.9423				
7	0.8910	0.4544	0	0.8910	56	-1.0017	-0.8262				
8	0.9153	0.4067	0	0.9153	57	-1.1258	-0.7678				
9	0.9352	0.3584	0	0.9352	58	-1.0555	-0.6772				
10	0.9509	0.3090	0	0.9509	59	-1.0004	-0.5845				
11	0.9658	0.2586	0	0.9658	60	-1.0303	-0.4699				
12	0.9780	0.2079	0	0.9780	61	-1.0246	-0.3956				
13	0.9815	0.1562	0	0.9815	62	-1.0850	-0.2959				
14	0.9944	0.1046	0	0.9944	63	-1.0052	-0.1972				
15	0.9985	0.0524	0	0.9985	64	-1.0917	-0.0984				
16	-0.9750	-0.0000	0	-0.9750	65	-1.3568	*				
17	-0.9695	0.1019	0	-0.9695	66	-1.4268	-0.2023				
18	-0.9555	0.2027	0	-0.9555	67	-1.0977	-0.4023				
19	-0.9212	0.3015	0	-0.9212	68	-1.0425	-0.5971				
20	-0.8900	0.3966	0	-0.8900	69	-1.0662	-0.7867				
21	-0.8444	0.4873	0	-0.8444	70	-1.0516	-0.9037				
22	-0.7868	0.5731	0	-0.7868	71	-1.2604	-1.1329				
23	-0.7246	0.6524	0	-0.7246	72	-1.4354	-1.2404				
24	-0.6524	0.7446	0	-0.6524	73	-1.2913	-1.4343				
25	-0.5751	0.8888	0	-0.5751	74	-1.1550	-1.5027				
26	-0.4875	0.8444	0	-0.4875	75	-0.9659	-1.6735				
27	-0.3960	0.8907	0	-0.3960	76	-0.7659	-1.7056				
28	-0.3013	0.9275	0	-0.3013	77	-0.5771	-1.6378				
29	-0.2047	0.9537	0	-0.2047	78	-0.4017	-1.6097				
30	-0.1019	0.9697	0	-0.1019	79	-0.2019	-1.5209				
31	0.0010	0.9750	0	0.0010	80	*	-1.9214				
32	0.1019	0.9697	0	0.1019	81	-0.2019	-1.9218				
33	0.2047	0.9537	0	0.2047	82	-0.4017	-1.8097				
34	0.3013	0.9275	0	0.3013	83	-0.5771	-1.8378				
35	0.3960	0.8907	0	0.3960	84	-0.7659	-1.7056				
36	0.4875	0.8444	0	0.4875	85	-0.9659	-1.6735				
37	0.5751	0.8888	0	0.5751	86	-1.1550	-1.5027				
38	0.6524	0.9246	0	0.6524	87	-1.2913	-1.4343				
39	0.7246	0.9524	0	0.7246	88	-1.4354	-1.2904				
40	0.7868	0.9751	0	0.7868	89	-1.2604	-1.1229				
41	0.8444	0.9875	0	0.8444	90	-1.0616	-0.9637				
42	0.8906	0.9466	0	0.8906	91	-1.0662	-0.7667				
43	0.9246	0.9013	0	0.9246	92	-1.0423	-0.5971				
44	0.9524	0.9275	0	0.9524	93	-1.0777	-0.4023				
45	0.9751	0.9537	0	0.9751	94	-1.0233	-0.2023				
46	0.9815	0.9697	0	0.9815	95	-1.0568	*				
47	0.9780	0.9697	0	0.9780	96	-1.0041	-0.1064				
48	0.9509	0.9466	0	0.9509	97	-1.0772	-0.2080				
49	0.9246	0.9013	0	0.9246	98	-1.0645	-0.5105				
50	0.9524	0.9275	0	0.9524	99	-1.0971	*				
51	0.9751	0.9537	0	0.9751	100	-1.0568	*				

DIVIDE BY 0.10000

* INDICATES A CONSTRAINT HAS BEEN APPLIED

50 = Y9

51 = Y10

52 = Y12

53 = Y13

54 = Y14

55 = Y15

56 = Y16

57 = Y17

58 = Y18

59 = Y19

60 = Y20

61 = Y21

62 = Y22

63 = Y23

64 = Y24

65 = Y25

66 = Y26

67 = Y27

68 = Y28

69 = Y29

70 = Y30

71 = Y31

72 = Y32

73 = Y33

74 = Y34

75 = Y35

76 = Y36

77 = Y37

78 = Y38

79 = Y39

80 = Y40

81 = Y41

82 = Y42

83 = Y43

84 = Y44

85 = Y45

86 = Y46

87 = Y47

88 = Y48

89 = Y49

90 = Y50

91 = Y51

92 = Y52

93 = Y53

94 = Y54

95 = Y55

96 = Y56

97 = Y57

98 = Y58

99 = Y59

100 = Y60

101 = Y61

102 = Y62

103 = Y63

104 = Y64

105 = Y65

106 = Y66

107 = Y67

108 = Y68

109 = Y69

110 = Y70

111 = Y71

112 = Y72

113 = Y73

114 = Y74

115 = Y75

116 = Y76

117 = Y77

118 = Y78

119 = Y79

120 = Y80

121 = Y81

122 = Y82

123 = Y83

124 = Y84

125 = Y85

126 = Y86

127 = Y87

128 = Y88

129 = Y89

130 = Y90

131 = Y91

132 = Y92

133 = Y93

134 = Y94

135 = Y95

136 = Y96

137 = Y97

138 = Y98

139 = Y99

140 = Y100

141 = Y101

142 = Y102

143 = Y103

144 = Y104

145 = Y105

146 = Y106

147 = Y107

148 = Y108

149 = Y109

150 = Y110

151 = Y111

152 = Y112

153 = Y113

154 = Y114

155 = Y115

156 = Y116

157 = Y117

158 = Y118

159 = Y119

160 = Y120

161 = Y121

162 = Y122

163 = Y123

164 = Y124

165 = Y125

166 = Y126

167 = Y127

168 = Y128

169 = Y129

170 = Y130

171 = Y131

172 = Y132

173 = Y133

174 = Y134

175 = Y135

176 = Y136

177 = Y137

178 = Y138

179 = Y139

180 = Y140

181 = Y141

182 = Y142

183 = Y143

184 = Y144

185 = Y145

186 = Y146

187 = Y147

188 = Y148

189 = Y149

190 = Y150

SCALED DISPLACEMENTS/ROTATIONS FOR LOAD CASE 1
* INDICATES A CONSTRAINT HAS BEEN APPLIED

COORDINATES		NUDE NO.		DISPLACEMENTS		ROTATIONS PHIZ	
X	Y	Z		UX	UY	UZ	PHIX
-0.9491	0.1975		99	1.9434	-0.4121		
-0.9175	0.2459		100	1.9202	-0.5124		
-0.9054	0.2936		101	1.8891	-0.6112		
-0.8866	0.3430		102	1.8226	-0.7084		
-0.8678	0.3864		103	1.8111	-0.8036		
-0.8494	0.4315		104	1.7640	-0.8968		
-0.8310	0.4750		105	1.7141	-0.9850		
-0.8127	0.5174		106	1.6591	-1.0759		
-0.7948	0.5584		107	1.5999	-1.1614		
-0.7768	0.5985		108	1.5260	-1.2439		
-0.7585	0.6378		109	1.4695	-1.332		
-0.7404	0.6757		110	1.3984	-1.3989		
-0.7224	0.7116		111	1.3236	-1.4708		
-0.6944	0.7465		112	1.2452	-1.5386		
-0.6764	0.7866		113	1.1654	-1.6022		
-0.6585	0.8257		114	1.0882	-1.6613		
-0.6406	0.8637		115	1.001	-1.7158		
-0.6227	0.9017		116	0.8992	-1.7654		
-0.6048	0.9367		117	0.8057	-1.8101		
-0.5864	0.9674		118	0.7099	-1.8497		
-0.5684	0.9869		119	0.6122	-1.8641		
-0.5505	0.9955		120	0.5146	-1.9134		
-0.5325	0.9975		121	0.4119	-1.9573		
-0.5145	0.9976		122	0.3099	-1.9260		
-0.4965	0.9948		123	0.2071	-1.9094		
-0.4787	0.9917		124	0.1057	-1.8774		
-0.4607	0.9887		125	0.1037	-1.9174		
-0.4427	0.9855		126	0.2071	-1.9094		
-0.4248	0.9815		127	0.3099	-1.9260		
-0.4068	0.9783		128	0.4119	-1.9573		
-0.3885	0.9648		129	0.2128	-1.9134		
-0.3705	0.9495		130	0.6122	-1.8641		
-0.3524	0.9447		131	0.7099	-1.8497		
-0.3344	0.9395		132	0.8057	-1.8101		
-0.3164	0.9353		133	0.8992	-1.7654		
-0.2984	0.9277		134	0.9901	-1.7158		
-0.2804	0.9197		135	1.0882	-1.6613		
-0.2624	0.9097		136	1.1654	-1.6022		
-0.2444	0.8995		137	1.2452	-1.5386		
-0.2264	0.8895		138	1.3236	-1.4708		
-0.2084	0.8717		139	1.3984	-1.3989		
-0.1904	0.8537		140	1.4695	-1.332		
-0.1724	0.2976		141	1.5266	-1.2439		
-0.1544	0.2584		142	1.5999	-1.1614		
-0.1364	0.2174		143	1.6291	-1.0759		
-0.1184	0.1750		144	1.7141	-0.9676		
-0.0994	0.4513		145	1.8451	-0.8668		
-0.0814	0.3864		146	1.9111	-0.8036		
-0.0634	0.3260		147	1.9784	-0.7084		

SCALED COORDINATES
 DIVIDE BY 1.00000

* INDICATES A CONSTRAINT HAS BEEN APPLIED

	X	Y	Z	COORDINATES	NODE NO.	DISPLACEMENTS	ROTATIONS
				L		UX UV UZ	PHIX PHIY PHIZ
10	0.9034	0.4936		0.9175	148	-1.6891	-0.6112
11	0.9175	0.4459		0.9291	149	-1.9202	-0.5124
12	0.9291	0.1975		0.9381	150	-1.9454	-0.4121
13	0.9381	0.1480		0.9446	151	-1.9645	-0.5105
14	0.9446	0.0995		0.9486	152	-1.9772	-0.2080
15	0.9486	0.0497			153	-1.9841	-0.1044
16							
17							
18							
19							
20							
21							
22							
23							
24							
25							
26							
27							
28							
29							
30							
31							
32							
33							
34							
35							
36							
37							
38							
39							
40							
41							
42							
43							
44							
45							
46							
47							
48							
49							
50							
51							
52							
53							
54							
55							
56							
57							
58							
59							
60							
61							

END OF PHASE /
 **** MAX SIZE OF BASE USED
 SET TO 10000

NO ERRORS OR WARNINGS IN THIS PHASE

A30

10 12 94 101 11 67 68 100

4 14 101 103 13 68 69 102

2 14 103 105 15 69 70 104

0 16 102 107 17 70 71 106

6 16 107 109 19 71 72 108

6 20 107 111 21 72 73 110

4 22 111 113 23 73 74 112

2 24 113 115 25 74 75 114

10 26 113 115 25 75 76 116

11 28 112 117 27 75 76 116

12 30 117 119 29 76 77 118

13 32 119 121 31 77 78 120

14 34 121 123 33 78 79 122

15 34 123 125 35 79 80 124

16 37 3 146 36 80 81 125

17 37 59 126 128 38 81 82 127

18 39 41 128 130 40 82 83 129

19 41 43 130 132 42 83 84 131

20 43 45 132 134 44 84 85 133

21 45 47 134 136 46 85 86 135

22 47 49 136 138 48 86 87 137

23 49 51 138 140 49 87 88 139

24 51 53 140 142 50 88 89 141

25 53 55 142 144 51 89 90 143

26 55 57 144 146 52 90 91 145

27 57 59 146 148 53 91 92 147

28 59 61 148 150 54 92 93 149

29 61 63 150 152 55 93 94 151

30 63 65 152 154 56 94 95 152

31 65 67 154 156 57 94 95 153

32 0.0859 10 1 0.0859 10 1

PUTNIS ARRAY

LINE	POINT	LINE	POINT	LINE	POINT	LINE	POINT
1	26.540	2	3.000	3	11.586	4	34.696
2	26.540	5	19.742	6	20.171	7	40.340
3	27.438	8	3.048	9	5.107	10	47.685
4	28.762	11	3.294	12	3.421	13	47.193
5	30.032	14	3.743	15	3.930	16	50.458
6	31.216	17	4.585	18	4.639	19	51.260
7	32.205	20	5.205	21	5.514	22	54.611
8	33.212	23	6.182	24	6.539	25	53.400
9	35.795	26	7.293	27	7.616	28	54.700
10	36.555	29	8.209	30	8.935	31	54.700
11	36.938	32	9.801	33	10.243	34	55.020
12	35.114	35	11.136	36	12.052	37	52.114
13	35.020	38	12.928	39	13.370	40	54.758
14	34.705	41	14.238	42	14.662	43	54.222
15	34.483	44	15.483	45	15.878	46	53.473
16	33.466	47	16.652	48	16.989	49	53.612
17	32.611	50	17.637	51	17.966	52	54.283
18	31.586	53	18.532	54	18.786	55	53.616
19	30.458	56	19.235	57	19.426	58	50.032
20	29.193	59	19.750	60	19.877	61	48.764
21	27.663	62	20.064	63	20.123	64	26.458
22	26.540	65	26.215	66	27.262	67	47.613
23	25.025	68	25.925	69	25.939	70	47.643
24	24.127	71	24.613	72	24.364	73	47.141
25	23.512	74	23.665	75	23.764	76	47.674
26	22.999	77	24.843	78	24.843	79	47.628
27	22.501	80	24.286	81	24.660	82	46.665
28	22.128	83	23.728	84	24.190	85	46.187

PAPER COORDINATES

LINE	POINT	LINE	POINT	LINE	POINT	LINE	POINT
1	3.429	2	26.540	3	11.586	4	34.696
5	11.286	6	26.540	7	20.171	8	40.340
7	5.013	9	3.048	10	5.107	11	47.685
10	3.189	11	3.294	12	3.421	13	47.193
13	3.571	14	3.743	15	3.930	16	50.458
16	4.150	17	4.585	18	4.639	19	51.260
19	4.715	20	5.205	21	5.514	22	54.611
22	5.040	23	6.182	24	6.539	25	53.400
25	5.920	26	7.293	27	7.616	28	54.700
28	6.009	29	8.209	30	8.935	31	54.700
31	6.364	32	9.801	33	10.243	34	55.020
34	10.088	35	11.136	36	12.052	37	52.114
37	12.485	38	12.928	39	13.370	40	54.758
40	13.807	41	14.238	42	14.662	43	54.222
43	15.077	44	15.483	45	15.878	46	53.473
46	16.262	47	16.652	48	16.989	49	53.612
49	17.531	50	17.637	51	17.966	52	54.283
52	18.258	53	18.532	54	18.786	55	53.616
55	19.021	56	19.235	57	19.426	58	50.032
58	19.000	59	19.750	60	19.877	61	48.764
61	19.982	62	20.064	63	20.123	64	26.458
64	20.158	65	26.540	66	27.262	67	47.613
67	20.89	68	25.925	69	25.939	70	47.643
70	21.599	71	24.613	72	24.364	73	47.141
73	24.530	74	23.665	75	23.764	76	47.674
76	24.187	77	24.843	78	24.843	79	47.628
79	24.511	80	24.286	81	24.660	82	46.665
82	23.326	83	23.728	84	24.190	85	46.187

NOTE

LINE	POINT	LINE	POINT	LINE	POINT	LINE	POINT
1	26.540	2	3.000	3	11.586	4	34.696
5	26.540	6	19.742	7	20.171	8	40.340
7	27.438	9	3.048	10	5.107	11	47.685
10	28.762	12	3.294	13	3.421	14	47.193
13	30.032	15	3.743	16	3.930	17	50.458
18	31.216	19	4.585	20	4.639	21	51.260
21	32.205	23	5.205	24	5.514	25	54.611
26	33.212	28	6.182	29	6.539	30	53.400
31	35.795	33	7.293	34	7.616	35	54.700
36	36.555	37	8.209	38	8.935	39	55.020
40	36.938	41	9.801	42	10.243	43	55.020
44	37.663	45	11.136	46	12.052	47	52.114
49	38.532	50	12.928	51	13.370	52	54.758
53	39.235	54	14.238	55	14.662	56	54.222
58	39.750	59	19.064	60	20.064	61	26.458
62	27.663	63	26.540	64	27.262	65	47.613
66	28.232	67	25.925	68	25.939	69	47.643
71	29.127	72	24.613	73	24.364	74	47.141
77	30.512	78	24.843	79	24.843	80	47.674
83	31.312	84	24.190	85	24.660	86	46.665
88	31.789	89	24.286	90	24.660	91	46.187

17.807	32.141	16.206	53.512	17.187
18.86	86	18.358	51.460	18.835
19.432	29.945	42	19.346	19.772
19.471	27.415	45	19.456	20.601
19.494	3.677	27.393	26.540	3.641
19.497	3.677	48	3.531	26.657
20.00	28.051	101	3.650	29.061
20.05	4.135	104	4.518	30.243
21.090	9.090	121	10.310	103
21.090	30.982	107	4.987	51.354
22.00	5.224	31.998	110	5.618
22.00	6.452	32.879	113	6.741
22.15	7.207	33.604	116	7.883
22.18	8.663	36.155	119	9.065
22.56	15.248	35.807	134	15.664
22.56	16.386	35.139	137	16.119
22.59	17.553	32.507	140	17.647
22.61	18.184	31.554	143	18.426
22.65	18.655	30.643	146	19.366
22.68	19.341	29.661	149	19.463
22.71	19.060	27.816	152	19.696
PARAMETERS IN CALLS I U LIMITS AND REGION ARE (0,U, 35.638,0,0, 60,00)				
19250 ENTERED = DETERMINES POINTS ARRAY FOR DISPLACED SHAPE PLOT .				
PLACEMENT IN STRUCTURE = 0.1988E-04 AT NUDE NUMBER 151				
SCALE OF DISPLACEMENT IS 0.0946E-05 X 1				
1	5.420	26.240	2	4.904
4	11.285	35.227	5	17.745
7	4.915	26.891	8	4.944
10	5.054	27.930	11	5.154
13	5.540	26.936	14	5.478
16	5.935	29.885	17	5.975
19	6.580	30.751	20	6.614
22	7.110	31.211	23	7.576
25	7.943	32.148	26	8.242
28	8.060	32.648	29	9.189
31	9.855	32.990	32	10.195
34	10.080	33.191	35	11.655
37	12.284	35.191	38	12.631
40	15.310	32.999	41	15.651
43	14.305	32.048	44	14.621
46	15.227	32.148	47	15.516
49	16.061	31.211	50	16.316
52	16.785	30.751	53	16.998
55	17.578	29.885	56	17.544
58	17.025	28.936	59	17.939
61	18.117	27.930	62	18.160
64	18.250	26.891	65	15.162
67	5.507	27.676	68	5.478
70	6.017	29.756	71	6.362
73	7.282	31.518	74	7.806
76	8.471	32.412	77	8.371
79	10.414	32.633	80	10.249
83	32.933	32.633	84	32.633
86	32.933	32.633	87	32.633
90	32.933	32.633	91	32.633
94	32.933	32.633	95	32.633
98	32.933	32.633	99	32.633
102	32.933	32.633	103	32.633
106	32.933	32.633	107	32.633
110	32.933	32.633	111	32.633
114	32.933	32.633	115	32.633
118	32.933	32.633	119	32.633
122	32.933	32.633	123	32.633
126	32.933	32.633	127	32.633
130	32.933	32.633	131	32.633
134	32.933	32.633	135	32.633
138	32.933	32.633	139	32.633
142	32.933	32.633	143	32.633
146	32.933	32.633	147	32.633
150	32.933	32.633	151	32.633
154	32.933	32.633	155	32.633
158	32.933	32.633	159	32.633
162	32.933	32.633	163	32.633
166	32.933	32.633	167	32.633
170	32.933	32.633	171	32.633
174	32.933	32.633	175	32.633
178	32.933	32.633	179	32.633
182	32.933	32.633	183	32.633
186	32.933	32.633	187	32.633
190	32.933	32.633	191	32.633
194	32.933	32.633	195	32.633
198	32.933	32.633	201	32.633
202	32.933	32.633	205	32.633
206	32.933	32.633	209	32.633
210	32.933	32.633	213	32.633
214	32.933	32.633	217	32.633
218	32.933	32.633	221	32.633
222	32.933	32.633	225	32.633
226	32.933	32.633	229	32.633
230	32.933	32.633	233	32.633
234	32.933	32.633	237	32.633
238	32.933	32.633	241	32.633
242	32.933	32.633	245	32.633
246	32.933	32.633	249	32.633
250	32.933	32.633	253	32.633
254	32.933	32.633	257	32.633
258	32.933	32.633	261	32.633
262	32.933	32.633	265	32.633
266	32.933	32.633	269	32.633
270	32.933	32.633	273	32.633
274	32.933	32.633	277	32.633
278	32.933	32.633	281	32.633
282	32.933	32.633	285	32.633
286	32.933	32.633	289	32.633
290	32.933	32.633	293	32.633
294	32.933	32.633	297	32.633
298	32.933	32.633	301	32.633
302	32.933	32.633	305	32.633
306	32.933	32.633	309	32.633
310	32.933	32.633	313	32.633
314	32.933	32.633	317	32.633
318	32.933	32.633	321	32.633
322	32.933	32.633	325	32.633
326	32.933	32.633	329	32.633
330	32.933	32.633	333	32.633
334	32.933	32.633	337	32.633
338	32.933	32.633	341	32.633
342	32.933	32.633	345	32.633
346	32.933	32.633	349	32.633
350	32.933	32.633	353	32.633
354	32.933	32.633	357	32.633
358	32.933	32.633	361	32.633
362	32.933	32.633	365	32.633
366	32.933	32.633	369	32.633
370	32.933	32.633	373	32.633
374	32.933	32.633	377	32.633
378	32.933	32.633	381	32.633
382	32.933	32.633	385	32.633
386	32.933	32.633	389	32.633
390	32.933	32.633	393	32.633
394	32.933	32.633	397	32.633
398	32.933	32.633	401	32.633
402	32.933	32.633	405	32.633
406	32.933	32.633	409	32.633
407	32.933	32.633	411	32.633
412	32.933	32.633	415	32.633
416	32.933	32.633	419	32.633
417	32.933	32.633	421	32.633
418	32.933	32.633	422	32.633
419	32.933	32.633	423	32.633
420	32.933	32.633	424	32.633
421	32.933	32.633	425	32.633
422	32.933	32.633	426	32.633
423	32.933	32.633	427	32.633
424	32.933	32.633	428	32.633
425	32.933	32.633	429	32.633
426	32.933	32.633	430	32.633
427	32.933	32.633	431	32.633
428	32.933	32.633	432	32.633
429	32.933	32.633	433	32.633
430	32.933	32.633	434	32.633
431	32.933	32.633	435	32.633
432	32.933	32.633	436	32.633
433	32.933	32.633	437	32.633
434	32.933	32.633	438	32.633
435	32.933	32.633	439	32.633
436	32.933	32.633	440	32.633
437	32.933	32.633	441	32.633
438	32.933	32.633	442	32.633
439	32.933	32.633	443	32.633
440	32.933	32.633	444	32.633
441	32.933	32.633	445	32.633
442	32.933	32.633	446	32.633
443	32.933	32.633	447	32.633
444	32.933	32.633	448	32.633
445	32.933	32.633	449	32.633
446	32.933	32.633	450	32.633
447	32.933	32.633	451	32.633
448	32.933	32.633	452	32.633
449	32.933	32.633	453	32.633
450	32.933	32.633	454	32.633
451	32.933	32.633	455	32.633
452	32.933	32.633	456	32.633
453	32.933	32.633	457	32.633
454	32.933	32.633	458	32.633
455	32.933	32.633	459	32.633
456	32.933	32.633	460	32.633
457	32.933	32.633	461	32.633
458	32.933	32.633	462	32.633
459	32.933	32.633	463	32.633
460	32.933	32.633	464	32.633
461	32.933	32.633	465	32.633
462	32.933	32.633	466	32.633
463	32.933	32.633	467	32.633
464	32.933	32.633	468	32.633
465	32.933	32.633	469	32.633
466	32.933	32.633	470	32.633
467	32.933	32.633	471	32.633
468	32.933	32.633	472	32.633
469	32.933	32.633	473	32.633
470	32.933	32.633	474	32.633
471	32.933	32.633	475	32.633
472	32.933	32.633	476	32.633
473	32.933	32.633	474	32.633
474	32.933	32.633	475	32.633
475	32.933	32.633	476	32.633
476	32.933	32.633	477	32.633
477	32.933	32.633	478	32.633
478	32.933	32.633	479	32.633
479	32.933	32.633	480	32.633
480	32.933	32.633	481	32.633
481	32.933	32.633	482	32.633
482	32.933	32.633	483	32.633
483	32.933	32.633	484	32.633
484	32.933	32.633	485	32.633
485	32.933	32.633	486	32.633
486	32.933	32.633	487	32.633
487	32.933	32.633	488	32.633
488	32.933	32.633	489	32.633
489	32.933	32.633	490	32.633
490	32.933	32.633	491	32.633
491	32.933	32.633	492	32.633
492	32.933	32.633	493	32.633
493	32.933	32.633	494	32.633
494	32.933	32.633	495	32.633
495	32.933	32.633	496	32.633
496	32.933	32.633	497	32.633
497	32.933	32.633	498	32.633
498	32.933	32.633	499	32.633
499	32.933	32.633	500	32.633
500	32.933	32.633	501	32.633
501	32.933	32.633	502	32.633
502	32.933	32.633	503	32.633
503	32.933	32.633	504	32.633
504	32.933	32.633	505	32.633
505	32.933	32.633	506	32.633
506	32.933	32.633	507	32.633
507	32.933	32.633	508	32.633</td

R19C30 ENTERED - DETERMINES PUNIS ARRAYS FOR DISPLACED SHAPE PLOT .
LARGEST DISPLACEMENT IN STRUCTURE = 0.19889E-04 A1 NUDE NUMBER 151

A32

82	12.422	80	11.385	52.969	14.257	56.955
85	14.144	83	13.271	52.653	14.200	56.412
88	16.365	86	15.564	51.741	15.848	51.516
91	17.456	89	16.789	50.321	17.124	24.756
94	17.469	92	17.693	28.526	17.664	27.076
97	5.464	95	18.009	26.540	96	2.457
100	5.039	98	5.507	27.594	99	2.563
103	5.750	101	5.729	28.446	102	2.632
106	6.613	104	6.093	29.541	103	0.240
109	7.001	107	6.595	50.166	108	0.242
112	7.704	110	7.224	50.911	111	7.429
115	8.203	113	7.461	51.527	114	8.227
118	9.577	116	8.67	52.052	117	9.078
121	10.204	119	9.681	52.492	120	9.940
124	11.265	122	10.621	52.679	123	10.941
127	12.349	125	11.708	52.677	126	12.671
130	13.490	128	12.067	52.570	129	13.104
133	14.384	131	13.794	52.294	132	14.042
136	15.410	134	14.668	51.678	133	14.943
139	15.447	137	15.466	51.531	138	15.714
142	16.275	140	16.169	50.677	141	16.379
145	17.076	143	16.758	29.990	144	16.923
148	17.442	146	17.415	29.049	147	17.356
151	17.664	149	17.552	28.156	150	17.600
		152	17.707	27.134	153	17.754

** END OF PAFC DRAW PRINT OUT FOR PHASE 8 **

NO ERRORS OR WARNINGS IN THIS PHASE

*** MAX SIZE OF BASE USED
SFT 10 2022 5000

A33

LISTING OF :AAMC-TRUNKS(4/ANS) PRODUCED ON 21MAY80 AT 08:45:06
OUTPUT BY LISFILE IN :AAH.UJCWB/S0* ON 21MAY80 AT 08:45:46 USING U14
DOCUMENT: TRUNKS(4/ANS)

A34

LEVEL 1.3 - OCTOBER 1977

LITTLE CHECK UN PAIRLUCKS FUK SPHERE
PHASE NUMBER 9 STARS HERE

DEFALU1 SIESES, ELEMENTS MODULARE CREATED IN 2015

SUBROUTINE K56210 8 NUDT ISUPAKMETRIC STRESSING ROUTINE
 SIGMA1 IS THE MAXIMUM STRESS IN THE PLANE, SIGMAC IS THE MINIMUM IN THE PLANE, SIGMAZ IS PERPENDICULAR TO THE PLANE, (I.E., HILF STRESS IN AXISYMETRIC CASES). ALPHA IS THE ANGLE OF SIGMA MEASURED TO THE Y-AXIS FROM THE ELEMENT X-AXIS, BETA IS THE ANGLE OF SIGMA1 TO THE GLOBAL X-AXIS, N/A INDICATES THE ELEMENT IS NOT IN THE GLOBAL XY PLANE.

NODE NU	MAX ANGLE OF SIG1			GLOBAL COORDINATES OF POSITION			R. NA
	SIGMA 1	SIGMA 2	SIGMA 3	STRESS	BETA	ANGLE	
***** THREE PRINCIPLE STRESSES *****							
1	1	0.757E-06	-0.108E-05	-0.111E-05	0.903E-06	0.13	-1.0000
1	1	0.368E-06	-0.109E-05	-0.652E-05	0.967E-06	0.13	-0.9750
1	1	0.146E-07	-0.110E-05	-0.180E-05	0.107E-07	0.00	-0.9500
1	1	-0.249E-06	-0.202E-05	-0.202E-05	0.909E-06	0.00	-0.9540
1	1	-0.165E-06	-0.207E-05	-0.207E-05	0.904E-06	-5.04	-0.9405
1	1	-0.165E-06	-0.214E-05	-0.214E-05	0.907E-06	0.00	-0.9755
1	1	-0.208E-06	-0.204E-05	-0.205E-05	0.158E-06	-5.03	-0.9406
1	1	-0.104E-06	-0.207E-05	-0.207E-05	0.982E-06	-5.03	-0.9444
1	1	-0.145E-06	-0.133E-05	-0.214E-05	0.106E-07	-5.97	-0.9446
2	1	-0.209E-06	-0.204E-05	-0.205E-05	0.916E-06	-5.00	-0.9944
2	1	-0.165E-06	-0.205E-05	-0.205E-05	0.982E-06	-5.00	-0.9695

4	1	-0.1606E+04	-0.2133E+04	-0.2140E+04	-0.1066E+07	66.44	-6.00	-0.9446	0.0943	0.0000	97
2	1	-0.2091E+06	-0.2442E+06	-0.2058E+06	-0.2000E+06	69.44	-9.00	-0.9875	0.1563	0.0000	9
2	1	-0.1630E+06	-0.2407E+06	-0.2008E+06	-0.1983E+06	69.44	-8.99	-0.9648	0.1526	0.0000	42
2	1	-0.2029E+06	-0.2430E+06	-0.2120E+06	-0.1963E+06	69.44	-8.99	-0.9561	0.1466	0.0000	48
2	1	-0.1693E+06	-0.2464E+06	-0.2046E+06	-0.1963E+06	67.02	-11.44	-0.9760	0.2047	0.0000	10
2	1	-0.1953E+06	-0.2480E+06	-0.2006E+06	-0.1963E+06	67.02	-11.43	-0.9555	0.2027	0.0000	67
2	1	-0.6083E+04	-0.2135E+04	-0.2134E+04	-0.1064E+07	67.02	-11.44	-0.9241	0.1975	0.0000	99
3	1	-0.2086E+06	-0.2463E+06	-0.2040E+06	-0.9722E+06	67.03	-12.00	-0.9740	0.2047	0.0000	10
3	1	-0.1615E+06	-0.2480E+06	-0.2006E+06	-0.9822E+06	67.03	-12.00	-0.9555	0.2027	0.0000	67
3	1	-0.1652E+06	-0.2480E+06	-0.2006E+06	-0.1044E+07	67.03	-12.00	-0.9241	0.1975	0.0000	99
3	1	-0.1642E+06	-0.2131E+06	-0.2132E+06	-0.1044E+07	67.03	-12.00	-0.9658	0.2506	0.0000	11
3	1	-0.2089E+06	-0.2464E+06	-0.2029E+06	-0.9192E+06	67.03	-14.97	-0.9416	0.2524	0.0000	-3
3	1	-0.1630E+06	-0.2404E+06	-0.2072E+06	-0.9606E+06	67.03	-14.98	-0.9175	0.2454	0.0000	100
3	1	-0.6071E+04	-0.2134E+04	-0.2134E+04	-0.1064E+07	67.03	-14.97	-0.9509	0.5090	0.0000	12
3	1	-0.2096E+06	-0.2459E+06	-0.2058E+06	-0.9149E+06	66.94	-17.49	-0.9772	0.5013	0.0000	68
3	1	-0.1952E+06	-0.2477E+06	-0.2070E+06	-0.9681E+06	66.94	-17.49	-0.9054	0.2936	0.0000	101
3	1	-0.6061E+04	-0.2134E+04	-0.2134E+04	-0.1044E+07	66.94	-17.49	-0.9355	0.5564	0.0000	13
3	1	-0.2088E+06	-0.2480E+06	-0.2070E+06	-0.9153E+06	66.94	-20.97	-0.9101	0.5494	0.0000	-4
3	1	-0.1651E+06	-0.2413E+06	-0.2135E+06	-0.1065E+07	66.94	-20.97	-0.8668	0.3442	0.0000	102
3	1	-0.2096E+06	-0.2434E+06	-0.2053E+06	-0.9121E+06	66.94	-23.90	-0.8155	0.4067	0.0000	14
3	1	-0.1651E+06	-0.2470E+06	-0.2072E+06	-0.9825E+06	66.94	-23.90	-0.8560	0.5960	0.0000	69
3	1	-0.6075E+04	-0.2134E+04	-0.2134E+04	-0.1065E+07	66.94	-23.90	-0.8878	0.5804	0.0000	103
4	1	-0.2088E+06	-0.2435E+06	-0.2035E+06	-0.9145E+06	67.03	-17.99	-0.9509	0.3090	0.0000	12
4	1	-0.1615E+06	-0.2470E+06	-0.2006E+06	-0.9680E+06	67.03	-17.99	-0.9272	0.5013	0.0000	68
4	1	-0.1670E+06	-0.2131E+06	-0.2132E+06	-0.1044E+07	67.03	-17.99	-0.9054	0.2936	0.0000	101
4	1	-0.2090E+06	-0.2430E+06	-0.2022E+06	-0.9153E+06	67.03	-20.97	-0.8555	0.5564	0.0000	13
4	1	-0.1651E+06	-0.2413E+06	-0.2070E+06	-0.9674E+06	67.03	-20.97	-0.8101	0.4542	0.0000	15
4	1	-0.1987E+04	-0.2134E+04	-0.2134E+04	-0.1065E+07	67.03	-20.97	-0.8668	0.4466	0.0000	-5
4	1	-0.2096E+06	-0.2434E+06	-0.2053E+06	-0.9121E+06	67.03	-23.90	-0.8155	0.4313	0.0000	104
4	1	-0.1651E+06	-0.2470E+06	-0.2072E+06	-0.9825E+06	67.03	-23.90	-0.8660	0.5000	0.0000	16
4	1	-0.6075E+04	-0.2134E+04	-0.2134E+04	-0.1065E+07	67.03	-23.90	-0.8944	0.4875	0.0000	70
4	1	-0.2088E+06	-0.2435E+06	-0.2035E+06	-0.9145E+06	67.03	-23.90	-0.8227	0.4750	0.0000	105
5	1	-0.2092E+06	-0.2435E+06	-0.2035E+06	-0.9149E+06	67.03	-23.98	-0.9153	0.4067	0.0000	14
5	1	-0.1630E+06	-0.2470E+06	-0.2006E+06	-0.9680E+06	67.03	-23.98	-0.8660	0.3960	0.0000	69
5	1	-0.1670E+06	-0.2131E+06	-0.2132E+06	-0.1044E+07	67.03	-23.98	-0.8668	0.3864	0.0000	103
5	1	-0.2090E+06	-0.2430E+06	-0.2022E+06	-0.9153E+06	67.03	-26.98	-0.8210	0.4542	0.0000	15
5	1	-0.1651E+06	-0.2413E+06	-0.2070E+06	-0.9674E+06	67.03	-26.98	-0.8667	0.4466	0.0000	-5
5	1	-0.1963E+04	-0.2134E+04	-0.2134E+04	-0.1065E+07	67.03	-26.98	-0.8155	0.4313	0.0000	104
5	1	-0.2096E+06	-0.2434E+06	-0.2053E+06	-0.9121E+06	67.03	-29.98	-0.8660	0.5000	0.0000	16
5	1	-0.1651E+06	-0.2470E+06	-0.2072E+06	-0.9825E+06	67.03	-29.98	-0.8944	0.4875	0.0000	70
5	1	-0.6075E+04	-0.2134E+04	-0.2134E+04	-0.1065E+07	67.03	-29.98	-0.9227	0.4750	0.0000	105
5	1	-0.2088E+06	-0.2435E+06	-0.2035E+06	-0.9145E+06	67.03	-32.98	-0.8660	0.3960	0.0000	16
5	1	-0.1630E+06	-0.2470E+06	-0.2006E+06	-0.9680E+06	67.03	-32.98	-0.8210	0.4542	0.0000	70
5	1	-0.1670E+06	-0.2131E+06	-0.2132E+06	-0.1044E+07	67.03	-32.98	-0.8667	0.4466	0.0000	-5
5	1	-0.2090E+06	-0.2430E+06	-0.2022E+06	-0.9153E+06	67.03	-32.98	-0.8155	0.4313	0.0000	104
5	1	-0.1651E+06	-0.2413E+06	-0.2070E+06	-0.9674E+06	67.03	-32.98	-0.8660	0.5000	0.0000	16
5	1	-0.1963E+04	-0.2134E+04	-0.2134E+04	-0.1065E+07	67.03	-32.98	-0.8944	0.4875	0.0000	70
5	1	-0.2096E+06	-0.2434E+06	-0.2053E+06	-0.9121E+06	67.03	-35.98	-0.8660	0.3960	0.0000	105
6	1	-0.2094E+06	-0.2431E+06	-0.2031E+06	-0.9106E+06	67.03	-35.98	-0.8660	0.3090	0.0000	16
6	1	-0.1630E+06	-0.2471E+06	-0.2006E+06	-0.9681E+06	67.03	-35.98	-0.8444	0.4750	0.0000	70
6	1	-0.1670E+06	-0.2131E+06	-0.2132E+06	-0.1044E+07	67.03	-35.98	-0.8227	0.4750	0.0000	105
6	1	-0.2090E+06	-0.2430E+06	-0.2023E+06	-0.9106E+06	67.03	-38.98	-0.8660	0.3960	0.0000	17
6	1	-0.1651E+06	-0.2413E+06	-0.2071E+06	-0.9674E+06	67.03	-38.98	-0.8307	0.4542	0.0000	-5
6	1	-0.1963E+04	-0.2134E+04	-0.2134E+04	-0.1065E+07	67.03	-38.98	-0.8155	0.4313	0.0000	104
6	1	-0.2096E+06	-0.2434E+06	-0.2053E+06	-0.9121E+06	67.03	-38.98	-0.8660	0.5000	0.0000	16
6	1	-0.1651E+06	-0.2471E+06	-0.2006E+06	-0.9681E+06	67.03	-38.98	-0.8444	0.4750	0.0000	70
6	1	-0.6075E+04	-0.2132E+04	-0.2132E+04	-0.1065E+07	67.03	-38.98	-0.8944	0.4750	0.0000	105
6	1	-0.2088E+06	-0.2435E+06	-0.2035E+06	-0.9145E+06	67.03	-41.98	-0.8660	0.3090	0.0000	18
6	1	-0.1630E+06	-0.2471E+06	-0.2006E+06	-0.9681E+06	67.03	-41.98	-0.8444	0.4750	0.0000	70
6	1	-0.1670E+06	-0.2131E+06	-0.2132E+06	-0.1044E+07	67.03	-41.98	-0.8227	0.4750	0.0000	105
6	1	-0.2090E+06	-0.2430E+06	-0.2023E+06	-0.9106E+06	67.03	-41.98	-0.8660	0.3960	0.0000	19
6	1	-0.1651E+06	-0.2413E+06	-0.2071E+06	-0.9674E+06	67.03	-41.98	-0.8307	0.4542	0.0000	-7
6	1	-0.1963E+04	-0.2134E+04	-0.2134E+04	-0.1065E+07	67.03	-41.98	-0.8155	0.4313	0.0000	104
6	1	-0.2096E+06	-0.2434E+06	-0.2053E+06	-0.9121E+06	67.03	-41.98	-0.8660	0.5000	0.0000	16
6	1	-0.1651E+06	-0.2471E+06	-0.2006E+06	-0.9681E+06	67.03	-41.98	-0.8444	0.4750	0.0000	70
6	1	-0.6075E+04	-0.2132E+04	-0.2132E+04	-0.1065E+07	67.03	-41.98	-0.8944	0.4750	0.0000	105

8	1	-0.2093E+06	-0.4033E+06	-0.2051E+06	-0.9112E+06	86.99	-41.99	-0.7452	0.6691	0.0000	60
8	1	-0.1031E+06	-0.2070E+06	-0.2070E+06	0.9666E+06	86.99	-41.99	-0.7246	0.6524	0.0000	72
8	1	-0.6096E+04	-0.1305E+06	-0.2155E+06	0.1062E+07	86.99	-41.99	-0.7050	0.6327	0.0000	109
8	1	-0.2091E+06	-0.4034E+06	-0.2051E+06	0.9116E+06	86.99	-41.99	-0.7072	0.6071	0.0000	6
8	1	-0.1031E+06	-0.2070E+06	-0.2070E+06	0.9666E+06	86.99	-41.99	-0.6895	0.6094	0.0000	78
8	1	-0.7275E+04	-0.1305E+06	-0.2155E+06	0.1062E+07	86.99	-41.99	-0.6718	0.6117	0.0000	110
8	1	-0.2093E+06	-0.4033E+06	-0.2051E+06	0.9118E+06	87.01	-46.00	-0.6692	0.7451	0.0000	62
8	1	-0.1031E+06	-0.2070E+06	-0.2070E+06	0.9663E+06	87.01	-46.00	-0.6524	0.7240	0.0000	73
8	1	-0.7404E+04	-0.1305E+06	-0.2155E+06	0.1064E+07	87.01	-46.00	-0.6357	0.7060	0.0000	111
9	1	-0.2094E+06	-0.4033E+06	-0.2052E+06	0.9118E+06	86.99	-46.00	-0.6692	0.7451	0.0000	22
9	1	-0.1031E+06	-0.2070E+06	-0.2070E+06	0.9666E+06	86.99	-46.00	-0.6524	0.7246	0.0000	73
9	1	-0.6415E+04	-0.1305E+06	-0.2154E+06	0.1064E+07	86.99	-46.00	-0.6357	0.7070	0.0000	111
9	1	-0.2091E+06	-0.4033E+06	-0.2052E+06	0.9118E+06	87.01	-46.00	-0.6246	0.7771	0.0000	23
9	1	-0.1031E+06	-0.2070E+06	-0.2070E+06	0.9666E+06	87.01	-46.00	-0.6156	0.7577	0.0000	74
9	1	-0.7149E+04	-0.1304E+06	-0.2154E+06	0.1064E+07	87.01	-46.00	-0.5970	0.7335	0.0000	112
9	1	-0.2093E+06	-0.4033E+06	-0.2053E+06	0.9118E+06	87.01	-46.00	-0.5874	0.8070	0.0000	24
9	1	-0.1031E+06	-0.2070E+06	-0.2070E+06	0.9663E+06	87.01	-46.00	-0.5751	0.7766	0.0000	74
9	1	-0.6445E+04	-0.1304E+06	-0.2154E+06	0.1064E+07	87.01	-46.00	-0.5584	0.7686	0.0000	113
10	1	-0.2094E+06	-0.4034E+06	-0.2053E+06	0.9123E+06	87.00	-54.00	-0.5494	0.8690	0.0000	24
10	1	-0.1031E+06	-0.2070E+06	-0.2070E+06	0.9666E+06	87.00	-54.00	-0.5385	0.8886	0.0000	74
10	1	-0.6433E+04	-0.1304E+06	-0.2154E+06	0.1064E+07	87.00	-54.00	-0.5284	0.8686	0.0000	113
10	1	-0.2091E+06	-0.4034E+06	-0.2053E+06	0.9123E+06	87.01	-54.00	-0.5186	0.8557	0.0000	25
10	1	-0.1031E+06	-0.2070E+06	-0.2070E+06	0.9666E+06	87.01	-54.00	-0.5081	0.8351	0.0000	110
10	1	-0.7190E+04	-0.1304E+06	-0.2154E+06	0.1064E+07	87.01	-54.00	-0.5176	0.8177	0.0000	114
10	1	-0.2093E+06	-0.4034E+06	-0.2053E+06	0.9123E+06	87.01	-54.00	-0.5071	0.8060	0.0000	26
10	1	-0.1031E+06	-0.2070E+06	-0.2070E+06	0.9666E+06	87.01	-54.00	-0.4975	0.8444	0.0000	75
10	1	-0.6445E+04	-0.1304E+06	-0.2154E+06	0.1064E+07	87.01	-54.00	-0.4870	0.8227	0.0000	115
11	1	-0.2094E+06	-0.4034E+06	-0.2053E+06	0.9123E+06	87.00	-54.00	-0.5494	0.8690	0.0000	26
11	1	-0.1031E+06	-0.2070E+06	-0.2070E+06	0.9666E+06	87.00	-54.00	-0.5385	0.8886	0.0000	74
11	1	-0.6433E+04	-0.1304E+06	-0.2154E+06	0.1064E+07	87.00	-54.00	-0.5284	0.8686	0.0000	113
11	1	-0.2091E+06	-0.4034E+06	-0.2053E+06	0.9123E+06	87.01	-54.00	-0.5186	0.8557	0.0000	27
11	1	-0.1031E+06	-0.2070E+06	-0.2070E+06	0.9666E+06	87.01	-54.00	-0.5081	0.8351	0.0000	111
11	1	-0.7182E+04	-0.1304E+06	-0.2154E+06	0.1064E+07	87.01	-54.00	-0.5176	0.8177	0.0000	114
11	1	-0.2093E+06	-0.4034E+06	-0.2053E+06	0.9123E+06	87.01	-54.00	-0.5071	0.8060	0.0000	28
11	1	-0.1031E+06	-0.2070E+06	-0.2070E+06	0.9666E+06	87.01	-54.00	-0.4975	0.8444	0.0000	76
11	1	-0.6445E+04	-0.1304E+06	-0.2154E+06	0.1064E+07	87.01	-54.00	-0.4870	0.8227	0.0000	117
12	1	-0.2094E+06	-0.4034E+06	-0.2053E+06	0.9123E+06	87.00	-60.01	-0.5494	0.8690	0.0000	26
12	1	-0.1031E+06	-0.2070E+06	-0.2070E+06	0.9666E+06	87.00	-60.01	-0.5385	0.8886	0.0000	74
12	1	-0.6433E+04	-0.1304E+06	-0.2154E+06	0.1064E+07	87.00	-60.01	-0.5284	0.8686	0.0000	113
12	1	-0.2091E+06	-0.4034E+06	-0.2053E+06	0.9123E+06	87.01	-60.01	-0.5186	0.8557	0.0000	27
12	1	-0.1031E+06	-0.2070E+06	-0.2070E+06	0.9666E+06	87.01	-60.01	-0.5081	0.8351	0.0000	111
12	1	-0.7182E+04	-0.1304E+06	-0.2154E+06	0.1064E+07	87.01	-60.01	-0.5176	0.8177	0.0000	114
12	1	-0.2093E+06	-0.4034E+06	-0.2053E+06	0.9123E+06	87.01	-60.01	-0.5071	0.8060	0.0000	28
12	1	-0.1031E+06	-0.2070E+06	-0.2070E+06	0.9666E+06	87.01	-60.01	-0.4975	0.8444	0.0000	76
12	1	-0.6445E+04	-0.1304E+06	-0.2154E+06	0.1064E+07	87.01	-60.01	-0.4870	0.8227	0.0000	117
13	1	-0.2094E+06	-0.4034E+06	-0.2053E+06	0.9123E+06	87.00	-66.01	-0.4667	0.9153	0.0000	28
13	1	-0.1031E+06	-0.2070E+06	-0.2070E+06	0.9666E+06	87.00	-66.01	-0.3606	0.8907	0.0000	76
13	1	-0.6433E+04	-0.1304E+06	-0.2154E+06	0.1064E+07	87.00	-66.01	-0.3464	0.8644	0.0000	117
13	1	-0.2091E+06	-0.4034E+06	-0.2053E+06	0.9123E+06	87.01	-66.01	-0.3365	0.9356	0.0000	29
13	1	-0.1031E+06	-0.2070E+06	-0.2070E+06	0.9666E+06	87.01	-66.01	-0.3244	0.9192	0.0000	117
13	1	-0.6445E+04	-0.1304E+06	-0.2154E+06	0.1064E+07	87.01	-66.01	-0.3143	0.8907	0.0000	118
14	1	-0.2094E+06	-0.4034E+06	-0.2053E+06	0.9123E+06	87.00	-72.00	-0.4667	0.9153	0.0000	28
14	1	-0.1031E+06	-0.2070E+06	-0.2070E+06	0.9666E+06	87.00	-72.00	-0.3606	0.8907	0.0000	76
14	1	-0.6433E+04	-0.1304E+06	-0.2154E+06	0.1064E+07	87.00	-72.00	-0.3464	0.8644	0.0000	117
14	1	-0.2091E+06	-0.4034E+06	-0.2053E+06	0.9123E+06	87.01	-72.00	-0.3365	0.9356	0.0000	29
14	1	-0.1031E+06	-0.2070E+06	-0.2070E+06	0.9666E+06	87.01	-72.00	-0.3244	0.9192	0.0000	117
14	1	-0.6445E+04	-0.1304E+06	-0.2154E+06	0.1064E+07	87.01	-72.00	-0.3143	0.8907	0.0000	118
15	1	-0.2094E+06	-0.4034E+06	-0.2053E+06	0.9123E+06	87.00	-72.00	-0.4667	0.9153	0.0000	28
15	1	-0.1031E+06	-0.2070E+06	-0.2070E+06	0.9666E+06	87.00	-72.00	-0.3606	0.8907	0.0000	76
15	1	-0.6433E+04	-0.1304E+06	-0.2154E+06	0.1064E+07	87.00	-72.00	-0.3464	0.8644	0.0000	117
15	1	-0.2091E+06	-0.4034E+06	-0.2053E+06	0.9123E+06	87.01	-72.00	-0.3365	0.9356	0.0000	29
15	1	-0.1031E+06	-0.2070E+06	-0.2070E+06	0.9666E+06	87.01	-72.00	-0.3244	0.9192	0.0000	117
15	1	-0.6445E+04	-0.1304E+06	-0.2154E+06	0.1064E+07	87.01	-72.00	-0.3143	0.8907	0.0000	118

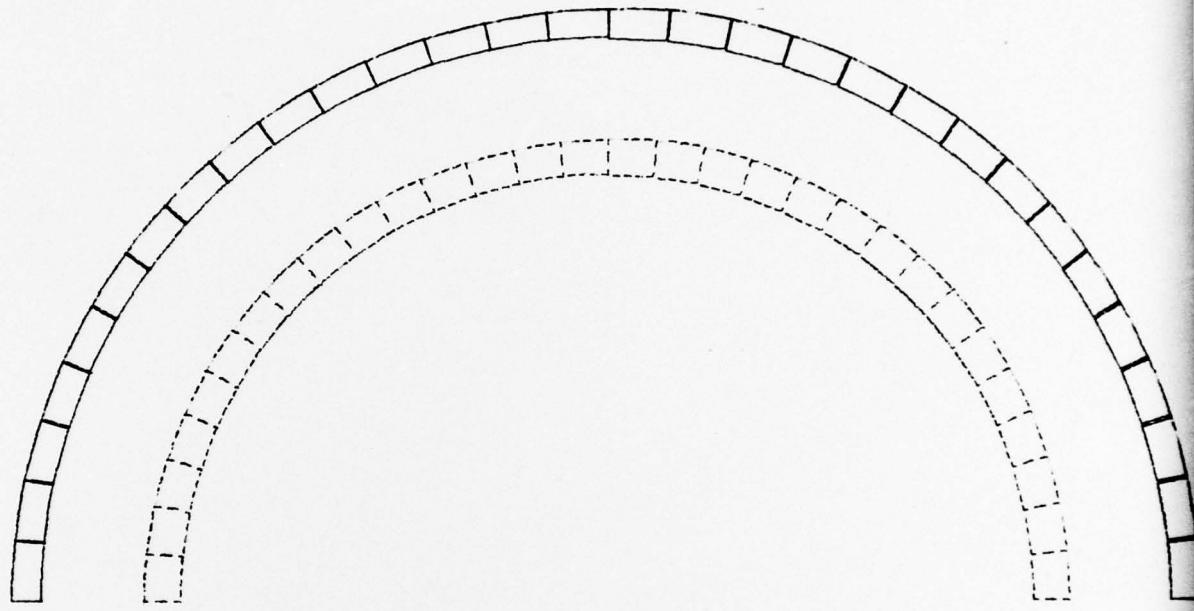
AVERAGING ROUTINE ENTERED
ANGLE LOAD GLOBAL COORDINATE

30	1	-0.2439e-04	-0.4135e-04	-0.2149e-04	-0.1066e-04	0.712	3.97	0.0945	0.0000	152
30	1	-0.2493e-06	-0.4023e-06	-0.2023e-06	-0.1009e-06	0.6995	5.04	0.0524	0.0000	64
30	1	-0.1333e-06	-0.4407e-06	-0.2074e-06	-0.1070e-06	0.4678	0.6	0.9736	0.0000	-50
30	1	-0.1153e-04	-0.2142e-04	-0.1249e-04	-0.1070e-07	0.494	5.03	0.9466	0.0000	153
30	1	0.2527e-06	-0.1080e-06	-0.1124e-06	-0.1003e-06	-0.0618	-0.13	1.0000	0.0000	6
30	1	0.3687e-06	-0.1080e-06	-0.1124e-06	-0.1003e-06	-0.0618	-0.13	0.0000	0.0000	65
30	1	0.1046e-07	-0.1103e-07	-0.1082e-05	0.1073e-07	-0.0502	-0.09	0.4501	0.0000	5

20	0.7071	0.0000	-0.409E 06	-0.203E 07	0.912E 06
21	0.7454	0.0091	-0.409E 06	-0.205E 07	0.911E 06
22	0.7714	0.0293	-0.409E 06	-0.205E 07	0.911E 06
23	0.8041	0.2078	-0.409E 06	-0.205E 07	0.911E 06
24	0.8367	0.3446	-0.409E 06	-0.205E 07	0.911E 06
25	0.8660	0.2000	-0.409E 06	-0.205E 07	0.911E 06
26	0.8910	0.4340	-0.409E 06	-0.205E 07	0.911E 06
27	0.9152	0.4067	-0.409E 06	-0.205E 07	0.911E 06
28	0.9353	0.3284	-0.409E 06	-0.205E 07	0.911E 06
29	0.9559	0.1954	-0.409E 06	-0.205E 07	0.911E 06
30	0.9620	0.2288	-0.409E 06	-0.205E 07	0.911E 06
31	0.9750	0.4079	-0.409E 06	-0.205E 07	0.911E 06
32	0.9875	0.1205	-0.409E 06	-0.205E 07	0.911E 06
33	0.9944	0.1046	-0.409E 06	-0.205E 07	0.911E 06
34	0.9960	0.9965	-0.409E 06	-0.205E 07	0.911E 06
35	0.9750	-0.0000	-0.409E 06	-0.205E 07	0.911E 06
36	0.9642	0.1019	-0.409E 06	-0.205E 07	0.911E 06
37	0.9553	0.2027	-0.409E 06	-0.205E 07	0.911E 06
38	0.9274	0.9274	-0.409E 06	-0.205E 07	0.911E 06
39	0.6900	0.3966	-0.409E 06	-0.205E 07	0.911E 06
40	0.4644	0.4075	-0.409E 06	-0.205E 07	0.911E 06
41	0.3960	0.6070	-0.409E 06	-0.205E 07	0.911E 06
42	0.5013	0.2731	-0.409E 06	-0.205E 07	0.911E 06
43	0.7450	0.5224	-0.409E 06	-0.205E 07	0.911E 06
44	0.6524	0.7446	-0.409E 06	-0.205E 07	0.911E 06
45	0.5751	0.5088	-0.409E 06	-0.205E 07	0.911E 06
46	0.4875	0.6444	-0.409E 06	-0.205E 07	0.911E 06
47	0.3960	0.6070	-0.409E 06	-0.205E 07	0.911E 06
48	0.5013	0.2733	-0.409E 06	-0.205E 07	0.911E 06
49	0.2027	0.7237	-0.409E 06	-0.205E 07	0.911E 06
50	0.1014	0.9097	-0.409E 06	-0.205E 07	0.911E 06
51	0.0000	0.7050	-0.409E 06	-0.205E 07	0.911E 06
52	0.1014	0.9097	-0.409E 06	-0.205E 07	0.911E 06
53	0.2027	0.7237	-0.409E 06	-0.205E 07	0.911E 06
54	0.5013	0.2733	-0.409E 06	-0.205E 07	0.911E 06
55	0.5950	0.0907	-0.409E 06	-0.205E 07	0.911E 06
56	0.4875	0.0444	-0.409E 06	-0.205E 07	0.911E 06
57	0.3960	0.6070	-0.409E 06	-0.205E 07	0.911E 06
58	0.5013	0.2733	-0.409E 06	-0.205E 07	0.911E 06
59	0.2027	0.7237	-0.409E 06	-0.205E 07	0.911E 06
60	0.1014	0.9097	-0.409E 06	-0.205E 07	0.911E 06
61	0.0000	0.7050	-0.409E 06	-0.205E 07	0.911E 06
62	0.1014	0.9097	-0.409E 06	-0.205E 07	0.911E 06
63	0.2027	0.7237	-0.409E 06	-0.205E 07	0.911E 06
64	0.5013	0.2733	-0.409E 06	-0.205E 07	0.911E 06
65	0.5950	0.0907	-0.409E 06	-0.205E 07	0.911E 06
66	0.4875	0.0444	-0.409E 06	-0.205E 07	0.911E 06
67	0.3960	0.6070	-0.409E 06	-0.205E 07	0.911E 06
68	0.5013	0.2733	-0.409E 06	-0.205E 07	0.911E 06
69	0.2027	0.7237	-0.409E 06	-0.205E 07	0.911E 06
70	0.1014	0.9097	-0.409E 06	-0.205E 07	0.911E 06
71	0.0000	0.7050	-0.409E 06	-0.205E 07	0.911E 06
72	0.1014	0.9097	-0.409E 06	-0.205E 07	0.911E 06
73	0.2027	0.7237	-0.409E 06	-0.205E 07	0.911E 06
74	0.5013	0.2733	-0.409E 06	-0.205E 07	0.911E 06
75	0.5950	0.0907	-0.409E 06	-0.205E 07	0.911E 06
76	0.4875	0.0444	-0.409E 06	-0.205E 07	0.911E 06
77	0.3960	0.6070	-0.409E 06	-0.205E 07	0.911E 06
78	0.5013	0.2733	-0.409E 06	-0.205E 07	0.911E 06
79	0.2027	0.7237	-0.409E 06	-0.205E 07	0.911E 06
80	0.1014	0.9097	-0.409E 06	-0.205E 07	0.911E 06
81	0.0000	0.7050	-0.409E 06	-0.205E 07	0.911E 06
82	0.1014	0.9097	-0.409E 06	-0.205E 07	0.911E 06
83	0.2027	0.7237	-0.409E 06	-0.205E 07	0.911E 06
84	0.5013	0.2733	-0.409E 06	-0.205E 07	0.911E 06
85	0.5950	0.0907	-0.409E 06	-0.205E 07	0.911E 06
86	0.4875	0.0444	-0.409E 06	-0.205E 07	0.911E 06
87	0.3960	0.6070	-0.409E 06	-0.205E 07	0.911E 06
88	0.5013	0.2733	-0.409E 06	-0.205E 07	0.911E 06
89	0.2027	0.7237	-0.409E 06	-0.205E 07	0.911E 06
90	0.1014	0.9097	-0.409E 06	-0.205E 07	0.911E 06
91	0.0000	0.7050	-0.409E 06	-0.205E 07	0.911E 06
92	0.1014	0.9097	-0.409E 06	-0.205E 07	0.911E 06
93	0.2027	0.7237	-0.409E 06	-0.205E 07	0.911E 06
94	0.5013	0.2733	-0.409E 06	-0.205E 07	0.911E 06
95	0.5950	0.0907	-0.409E 06	-0.205E 07	0.911E 06
96	0.4875	0.0444	-0.409E 06	-0.205E 07	0.911E 06
97	0.3960	0.6070	-0.409E 06	-0.205E 07	0.911E 06
98	0.5013	0.2733	-0.409E 06	-0.205E 07	0.911E 06
99	0.2027	0.7237	-0.409E 06	-0.205E 07	0.911E 06
100	0.1014	0.9097	-0.409E 06	-0.205E 07	0.911E 06
101	0.0000	0.7050	-0.409E 06	-0.205E 07	0.911E 06
102	0.1014	0.9097	-0.409E 06	-0.205E 07	0.911E 06
103	0.2027	0.7237	-0.409E 06	-0.205E 07	0.911E 06
104	0.5013	0.2733	-0.409E 06	-0.205E 07	0.911E 06
105	0.5950	0.0907	-0.409E 06	-0.205E 07	0.911E 06
106	0.4875	0.0444	-0.409E 06	-0.205E 07	0.911E 06
107	0.3960	0.6070	-0.409E 06	-0.205E 07	0.911E 06
108	0.5013	0.2733	-0.409E 06	-0.205E 07	0.911E 06
109	0.2027	0.7237	-0.409E 06	-0.205E 07	0.911E 06
110	0.1014	0.9097	-0.409E 06	-0.205E 07	0.911E 06
111	0.0000	0.7050	-0.409E 06	-0.205E 07	0.911E 06

NO ENDLESS WARINGS IN THIS PHASE

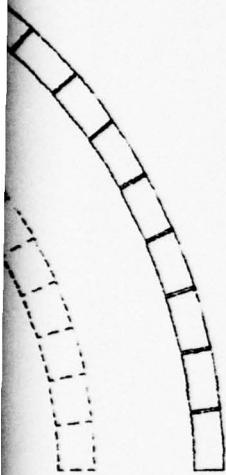
***** MAX SIZE OF BASE USED
SRT 10 2440
SRT 10 2600



PAFEC/DRAW ON 22/03/78 AT 09/29/49

DISPLACED SHAPE PLOT FROM EXAMPLE RUN

X



DISPLACED SHOWN DOTTED
SCALE OF DISPLACEMENTS =
0.0000000NITS/CM
DRG. NO. 1
SCALE = 0.0859:1

FIG. 1

2

Detachable Abstract Cards

These abstract cards are inserted in A.U.W.E. reports and notes for the convenience of librarians and others who need to maintain an information index

<u>UNCLASSIFIED/UNLIMITED</u>	<u>UNCLASSIFIED/UNLIMITED</u>	<u>UNCLASSIFIED/UNLIMITED</u>
A.U.W.E. Publication 45685 W. J. Butterworth April, 1978	62:681.3 PAFEC75 on the A.U.W.E. ICL 1904S* A Users Guide	62:681.3 PAFEC75 is the latest development in the PAFEC suite which carries out stress or thermal analysis on any structure by means of finite element methods. A guide to the method of use on the 1904S* at A.U.W.E. is given. It is intended that later a dedicated minicomputer will become available.
A.U.W.E. Publication 45685 W. J. Butterworth April, 1978	62:681.3 PAFEC75 on the A.U.W.E. ICL 1904S* A Users Guide	62:681.3 PAFEC75 is the latest development in the PAFEC suite which carries out stress or thermal analysis on any structure by means of finite element methods. A guide to the method of use on the 1904S* at A.U.W.E. is given. It is intended that later a dedicated minicomputer will become available.

UNCLASSIFIED/UNLIMITED

Detachable Abstract Cards

These abstract cards are inserted in A.U.W.E. reports and notes for the convenience of librarians and others who need to maintain an information index

<u>UNCLASSIFIED/UNLIMITED</u>	<u>UNCLASSIFIED/UNLIMITED</u>	<u>UNCLASSIFIED/UNLIMITED</u>	<u>UNCLASSIFIED/UNLIMITED</u>
A.U.W.E. Publication 45685 W. J. Butterworth April, 1978	62:681.3 PAFEC75 on the A.U.W.E. ICL 1904S* A Users Guide	A.U.W.E. Publication 45685 W. J. Butterworth April, 1978	62:681.3 PAFEC75 on the A.U.W.E. ICL 1904S* A Users Guide
	PAFEC75 is the latest development in the PAFEC suite which carries out stress or thermal analysis on any structure by means of finite element methods. A guide to the method of use on the 1904S* at A.U.W.E. is given. It is intended that later a dedicated minicomputer will become available.	PAFEC75 is the latest development in the PAFEC suite which carries out stress or thermal analysis on any structure by means of finite element methods. A guide to the method of use on the 1904S* at A.U.W.E. is given. It is intended that later a dedicated minicomputer will become available.	PAFEC75 is the latest development in the PAFEC suite which carries out stress or thermal analysis on any structure by means of finite element methods. A guide to the method of use on the 1904S* at A.U.W.E. is given. It is intended that later a dedicated minicomputer will become available.

UNCLASSIFIED/UNLIMITED